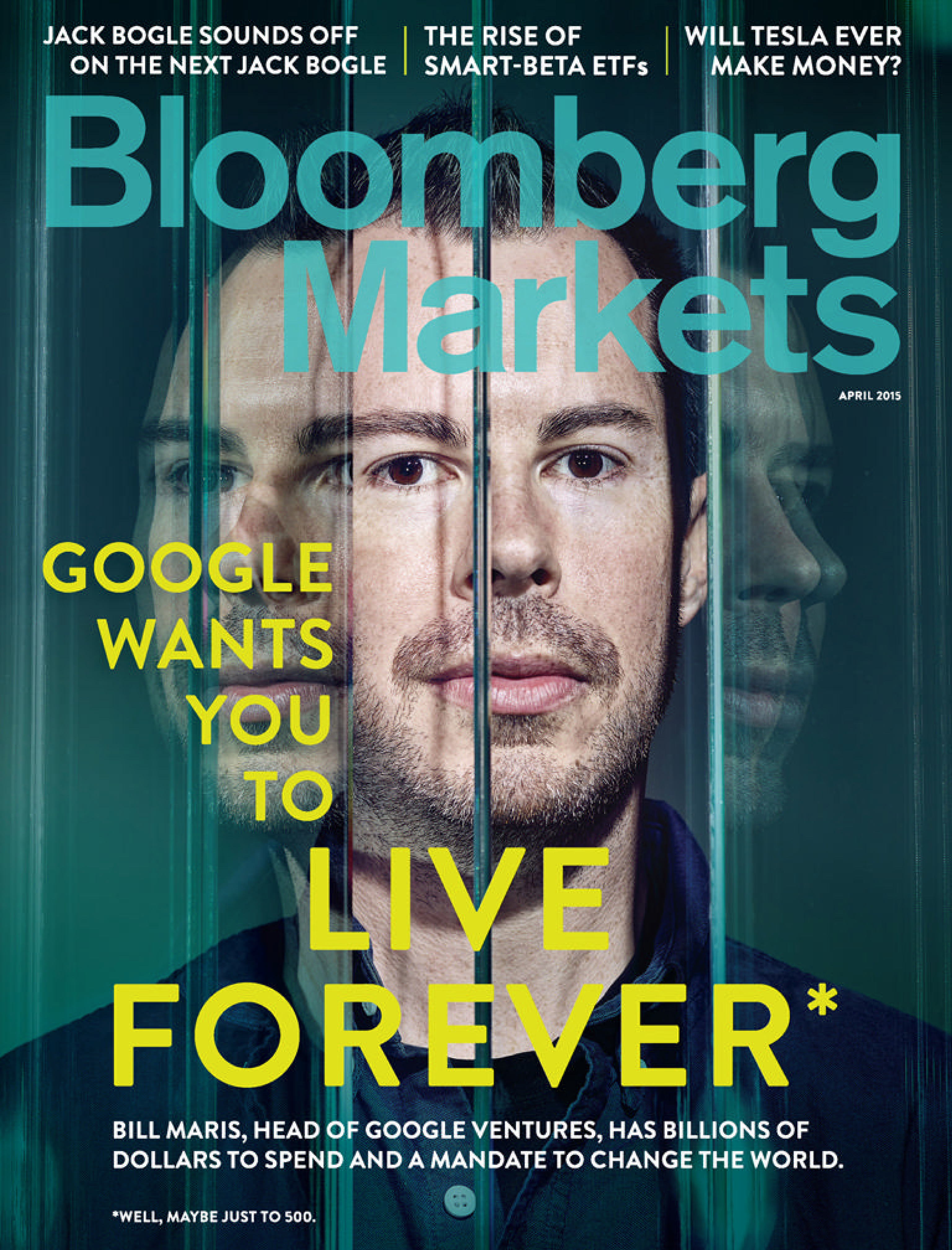


JACK BOGLE SOUNDS OFF ON THE NEXT JACK BOGLE

THE RISE OF SMART-BETA ETFs

WILL TESLA EVER MAKE MONEY?

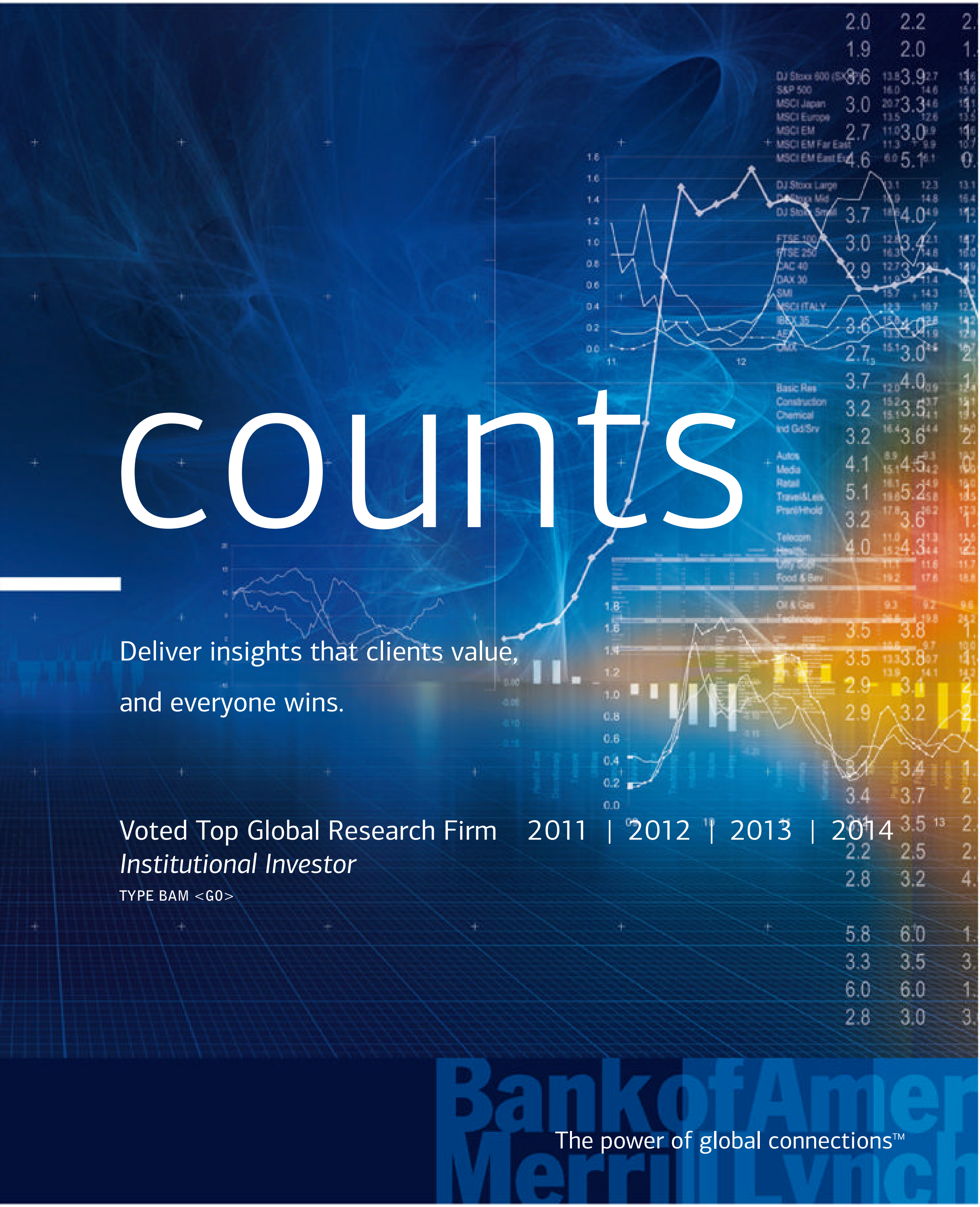
Bloomberg Markets

APRIL 2015

GOOGLE WANTS YOU TO LIVE FOREVER*

BILL MARIS, HEAD OF GOOGLE VENTURES, HAS BILLIONS OF DOLLARS TO SPEND AND A MANDATE TO CHANGE THE WORLD.

*WELL, MAYBE JUST TO 500.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Deliver insights that clients value,
and everyone wins.
Voted Top Global Research Firm 2011 | 2012 | 2013 | 2014
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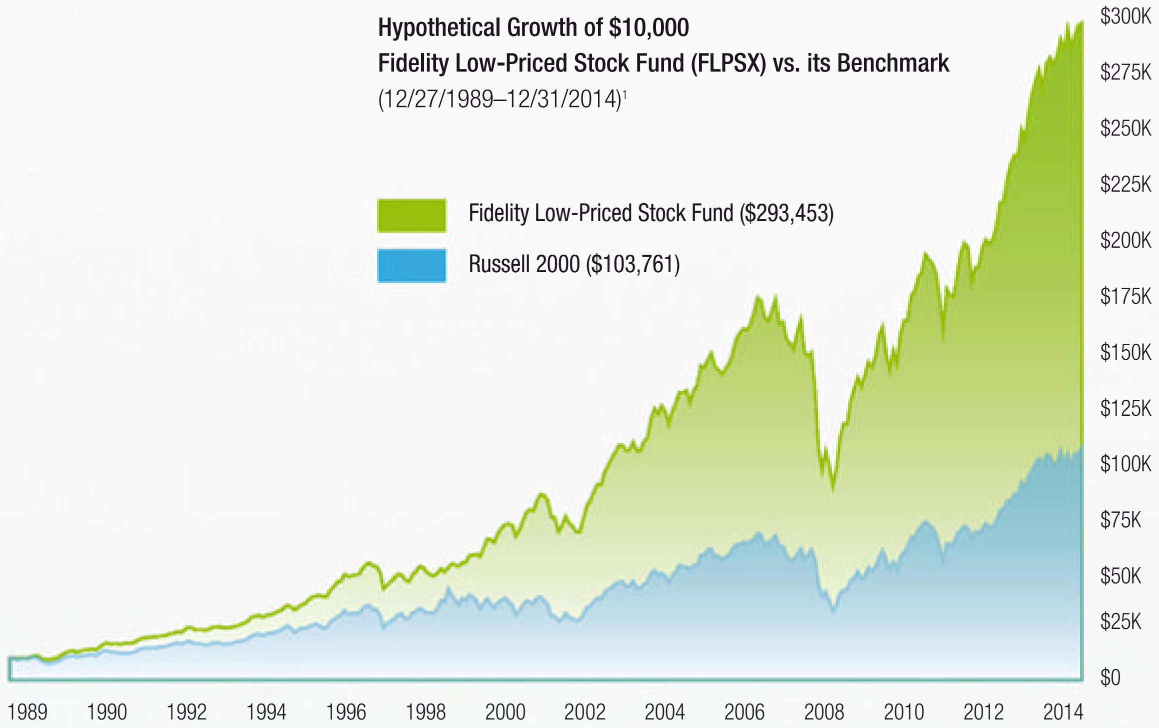

Average Annual Total Returns as of 12/31/2014	1 year	3 year	5 year	10 year	Life of Fund Since 12/27/89	Expense Ratio[2]
Fidelity® Low-Priced Stock Fund	7.65%	19.66%	15.63%	9.25%	14.46%	0.82%
Russell 2000 Index[3]	4.89%	19.21%	15.55%	7.77%	9.80%	

Performance data shown represents past performance and is no guarantee of future results. Investment return and principal value will fluctuate, so investors may have a gain or loss when shares are sold. Current performance may be higher or lower than what is quoted, and investors should visit Fidelity.com/performance for most recent month-end performance.

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[1]The chart above illustrates the performance of a hypothetical $10,000 investment made in the fund and a benchmark since the inception date of the product. Benchmark returns include reinvestment of capital gains and dividends, if any, but do not reflect any fees or expenses. It is not possible to invest in an index. This chart is not intended to imply any future performance of the investment product.

[2]Expense Ratio is the total annual fund operating expense ratio from the fund's most recent prospectus.

[3]Russell 2000 Index is a market capitalization–weighted index designed to measure the performance of the small-cap segment of the U.S. equity market. It includes approximately 2,000 of the smallest securities in the Russell 3000 Index. It is not possible to invest directly in an index.

April

volume 24 / number 04

‘We’ve had too much innovation in this business, far too much. How many innovations have helped investors?’ *Jack Bogle* *page 54*

FEATURES

PHOTOGRAPH BY **CHRISTOPHER LEAMAN**

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April

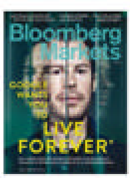
FEATURES (CONTINUED)

COMMENTARY

AGENDA

STRATEGIES

ON THE COVER



Bill Maris, photographed Jan. 27 in Mountain View, California

Photograph by **IAN ALLEN**

ILLUSTRATION BY ROBERTO PARADA

Editor's View

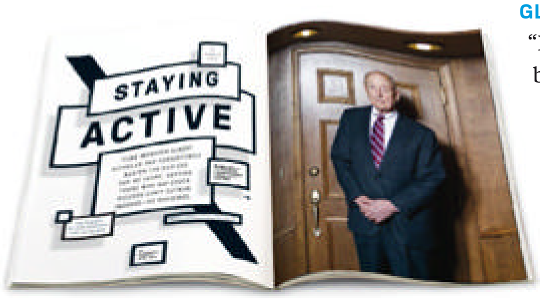
Fund Fights

RECENT HISTORY HASN'T been kind to active fund managers. Last year, just 21 percent of the funds that actively select U.S. stocks beat their benchmarks. No wonder money is streaming out of active management and into passive index funds and ETFs.

One man who has bucked this trend is Albert Nicholas, whose Nicholas Fund tops the diversified U.S. equities category in our annual ranking of the best-performing mutual funds. Nicholas, 84, has outrun the Standard & Poor's 500 Index by an average of 2 percentage points for the past 40 years. "Some guys who are smarter than I am say we can't outperform like this, but we have done it, so I will leave it at that," Nicholas tells Charles Stein (**"STAYING ACTIVE,"** page 44).

> 'Guys who are smarter than I am say we can't outperform like this,' says No. 1 fund manager Nicholas.

One of the smart guys who might give Nicholas an argument is Jack Bogle, founder of index fund giant Vanguard Group. Bogle, 85, has few good things to say about active management or, for that matter, about the innovators who claim they're following in his footsteps, report Michael P. Regan and Robert S. Dieterich (**"IS THERE A NEXT JACK BOGLE? NOT IF YOU ASK JACK BOGLE,"** page 54). "Nobody plunges into this battle to build a better industry with any more enthusiasm than I do," Bogle says.



Bogle harbors particular scorn for so-called smart-beta ETFs: "Don't mention smart beta in this office! I don't even know what it means. Baloney. Marketing!" These funds, which track customized indexes and are run by computers, now account for 20 percent of the U.S. ETF market, write Anthony Effinger and Eric Balchunas (**"ATTACK OF THE ALGORITHMS!"** on page 64). If a smart-beta ETF is based on an algorithm designed by humans, does that make it active or passive? It depends on whom you ask. In the black-and-white battle between active and passive, there are, it seems, more than a few shades of gray.

Ron Henkoff

EXECUTIVE EDITOR

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Letters

"Whiz Kid"

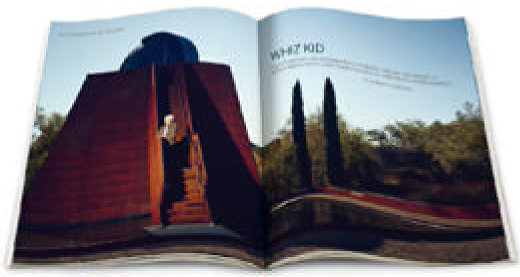
MARCH 2015

We all see plans to "fix" the bond markets. But this idea is just silly. The "eBonds" (which are just an inverse credit-linked note) would strip out credit risk. But why? Hasn't credit risk been one of the best-performing ways to make money over the years?

PETER TCHIR
Head of macro strategy, Brean Capital
New York

Mac McQuown is a perfect topic and guy to profile in this manner.

MARK HOWARD
Head of U.S. credit strategy, BNP Paribas
New York



"Bob Dudley's Russian Winter"

FEBRUARY 2015

A great article that makes me question even more my stock ownership of BP and Mr. Dudley's common sense. A minority partnership with Vladimir Putin and a company in Russia? Are you not just a pen stroke away from nationalization there, among other things?

JOHN CULVER
Wichita, Kansas

"The Worst Care Money Can Buy"

FEBRUARY 2015

Thanks for capturing the sorry state of affairs in such powerful language. A study we just finished in Uttar Pradesh shows women spend an average of 850 rupees for maternity care that should be free while abuse—both physical and verbal—is common.

SANGHITA BHATTACHARYYA
Public Health Foundation of India
New Delhi

February 2015 issue

I am a new subscriber. I expected to read a business magazine and never thought that I would be brought to tears by "The Coyotes and the Banks" and "The Worst Care Money Can Buy." I read and reread these stories and shared them with many others. I don't know what the answer is to these two situations, but it's incredibly important that people have an understanding of such real human struggles. Thank you for the research and hard work your writers put into these stories and for publishing them to educate us.

NANCY GIORDANO
Bedminster, New Jersey

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AGENDA

Robinhood co-founders Baiju Bhatt and Vladimir Tenev in the middle of their merry band

Playing for Zero

The iPhone app Robinhood lets you trade stocks for free. What could possibly go wrong?

ILLUSTRATION BY MATT TAYLOR

THE PITCHMAN FOR ROBINHOOD, THE no-fee stock brokerage, looks a little like actor Seth Rogen: bearded, chubby, and, to some viewers, possibly stoned.

In the company's 80-second online ads, he takes aim at millennials, assuring them that they don't need much cash to triumph in the stock market. Using Robinhood, he says, you don't even have to pay the industry-standard trading commissions that can erode profits on the small trades newbies tend to make. All you'll need is Robinhood's sleek iPhone app. (Android and Web versions are in the works.)

The 25-person startup is the creation of Vladimir Tenev, 28, and Baiju Bhatt, 30. The two were roommates at Stanford University, where they studied physics, before moving to New York in 2010 to build high-frequency software systems for hedge funds and banks. The Occupy Wall Street Movement took over Zuccotti Park while they were there, and writing computer code to help the rich get richer left them feeling unfulfilled. "People expected more from us," Bhatt says.

Working on Wall Street also taught them that the true cost of a trade had fallen to fractions of a cent, at least for institutional customers. Meanwhile, retail investors were stuck paying as much as $10 per transaction online. Tenev and Bhatt wondered if they could find a way to bring zero-commission trading to the masses. Their competitors were saddled with humans; they could shave costs with software. "Ten years ago, you wouldn't have been able to provide this service with 25 people," says Tenev, who looks like a young Steve Jobs. "It would have taken 500."

They flirted with calling their company CashCat after cashcats.biz—a website with photos of felines lounging among $100 bills—before settling on Robinhood. After all, they would be spreading the stock market's wealth to their own skeptical, struggling generation. "There are a lot of people in our age group who have lost faith in the system," Tenev says.

It was a hard sell with venture capitalists. (A startup called Zecco offered zero-commission trading in 2006 and then revoked the deal over time.) But Google Ventures made a small investment in late 2012, and then Robinhood landed $3 million more in seed money from Index Ventures, Andreessen Horowitz, and angel investor Tim Draper in September 2013. Two months later, Bhatt and Tenev made public their plans for free trading. The waiting list for early access to the app reached 10,000 in just an hour; within months, it had surpassed 500,000, with people peddling invitations on EBay. Robinhood raised a further $13 million in September from a group that included celebrities Jared Leto and Snoop Dogg. "Congrats 2 tha @robinhoodapp team on their launch!" Snoop tweeted on Dec. 11, shortly after Robinhood hit Apple's App Store. "Buy low stay high."

Like many Silicon Valley idealists, Bhatt and Tenev insist that users come first and that their startup will focus on generating a profit later. But, when pressed, they say they make money by gleaning some of the interest on cash held in customer accounts and soon will charge users to borrow to make trades. On Wall Street, the latter is called leverage, or margin. It can be treacherous for individual investors as well as finance professionals; the Nobel Prize–winning Ph.D.'s at Long-Term Capital Management found that out when their hedge fund blew up in 1998.

Margin lending can be lucrative. E*Trade Financial charges as much as 8.4 percent; the highest rate at TD Ameritrade Holding is 9 percent. Tenev says customers would need to complete a suitability questionnaire before being able to trade on margin and have at least $2,000 in their accounts (the minimum required by U.S. regulators). Robinhood also plans to charge for short selling, another practice that can dent the portfolios of day traders and professionals alike; it, too, may be offered later this year.

Allowing millennials to buy stock with leverage and go short, let alone trade for free from their iPhones, could get ugly, says Kate Holmes, founder of Belmore Financial, a Las Vegas–based financial planning firm that caters to the generation. Many Americans aged 18 to 34—Robinhood's target demographic—are financially illiterate, she says. "I keep hearing people who don't know what a mutual fund is say, 'I'd like to trade stocks,'" says Holmes, herself a millennial at 31. "Please do not encourage anyone to trade on margin!" she adds.

If Robinhood ends up attracting enough followers, the company could force commissions to zero across the industry, says Michael Guillemette, a professor of financial planning at the University of Missouri.

RACE TO THE BOTTOM

HOW MUCH AN ONLINE TRADE CAN COST YOU

*iPhone only

"I think it will cause the big brokerage houses, like Charles Schwab and Fidelity, to follow suit," he predicts.

Guillemette, 30, uses Robinhood to buy just a few shares of an exchange-traded fund with every paycheck. Micropurchases like that don't make sense if each one costs $7 or $10, he says.

If the big guys are fretting, they aren't showing it. "Zero-commission trading is not new," says Katrina Booker, an Ameritrade spokeswoman. "We continue to watch this, but it's not something that we worry about."

Tenev and Bhatt say that, so far, they are creating investors, not wild-eyed speculators. "The average customer places four or five trades a month," Tenev says. "They aren't becoming day traders."

ANTHONY EFFINGER

$10 billion Approximate revenue at Goldman Sachs in past five years from fund investments that might be capped by the Volcker Rule

Source: Regulatory filings

Saw It Coming

Hedge fund manager Zach Schreiber called the plunge in crude oil prices—and made about a billion dollars.

A CLOWN CAR. That was the image on the slide Zach Schreiber, co-founder and CEO of PointState Capital, put up to make the point that too many money managers were crowded into the oil's-going-higher trade. The date was May 5, 2014, and his audience at the Sohn Investment Conference in New York numbered some 3,000 people, including many famous hedge fund managers. "We believe crude oil is going lower—much lower," he said. "If you are long, I'm sorry for you."

Benchmark crude oil futures traded at $100 a barrel that day and a few weeks later got above $107. Then the rout began. By early January, the price was below $50 a barrel.

PointState made about 27 percent for investors after fees last year. The firm's profit of about $2 billion came roughly half from the short bet on oil, according to people familiar with the matter, who asked to remain anonymous. The rest was mostly from health-care stocks and macroeconomic bets. Only a few managers are known to have made big gains on the oil selloff, including Pierre Andurand's London-based hedge fund, which gained 38 percent in 2014 on a smart bet against crude. And no one made a call as early and as publicly as Schreiber.

Founded in 2011 by Schreiber and a group who had worked together at Stan Druckenmiller's Duquesne Capital Management, PointState was still little known when Schreiber addressed the conference last year. Its profile will be rising if the firm makes more prescient market calls.

KATHERINE BURTON, KELLY BIT AND SIMONE FOXMAN

LET'S BE FRANC

While oil's collapse took months, the Swiss currency surge came in a flash.

AFTER THE Swiss National Bank abandoned its euro peg on Jan. 15, the franc's value soared in minutes, roiling markets around the world.

Unprepared traders got killed, but some were poised to profit from the event. One example was the Swiss-German hedge fund firm Quaesta Capital. The firm had derivatives that paid off when the exchange rate jumped. From a note on its website: "Quaesta Capital's volatility program [was] prepared for such a move by owning subfloor optionality." The volatility program, or v-Pro, comes in two flavors, which both had big gains.

When contacted about the trade, the firm declined to comment.

STEPHANIE BAKER

+41% INTRADAY SWING IN VALUE OF THE FRANC VERSUS EURO

+14.5% YEAR-TO-DATE GAIN AS OF JAN. 20 FOR THE "STANDARD" V-PRO STRATEGY ...

+28% ... AND FOR THE "DYNAMIC" V-PRO STRATEGY

Sources: Bloomberg, Quaesta Capital

MUNSHI AHMED/BLOOMBERG

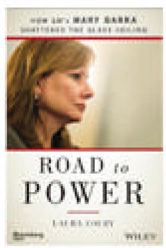
ILLUSTRATION BY WEBUYYOURKIDS

ART APPRECIATION What happened? Experts decided it was by John Constable.

BUY **$5,212** (AT CHRISTIE'S, 2013) SELL **$5.2 MILLION** (AT SOTHEBY'S, 2015)

When Her Future Called

MARY BARRA THOUGHT THE PHONE MESSAGE WAS A PRANK WHEN SHE GOT THE CALL THAT SET HER ON THE PATH TO BECOMING CEO OF GM.



GENERAL MOTORS sent Mary Barra to Stanford University's Graduate School of Business, where she earned her MBA in 1990. After she returned to the automaker, Barra spent several years in a midlevel manufacturing job "that wasn't my fave," she says. She wanted to use her business school skills.

One day in 1997, she got a phone message from someone saying that GM's then-chairman and CEO, Jack Smith, wanted to interview her for a position in his office. "I thought it was a joke," she says, and later that same day asked her boss, Ken Varisco, who the prankster was.

He looked sheepish and apologized. "I didn't get a chance to talk to you about this yet," he said. "You'd better return that call."

Barra did and got the job, which had the title: director, office of the chairman and vice chairman. She spent the next two years shadowing Smith and Vice Chairman Harry Pearce, sitting in on board meetings, researching new technologies, helping reorganize corporate staffs, and developing GM's women's affinity group. Coming into daily contact with the top tier of GM executives pegged her as a rising star.

ADAPTED FROM *ROAD TO POWER: HOW GM'S MARY BARRA SHATTERED THE GLASS CEILING* (BLOOMBERG PRESS/WILEY, 2015) BY FORMER *BLOOMBERG MARKETS* MANAGING EDITOR **LAURA COLBY**

ILLUSTRATION BY **AUTUMN WHITEHURST**

TRADERS IN YOUR WALLET

Regulators say two bank employees used credit card data to inform their bets on retailer shares.

CAPITAL ONE FINANCIAL'S marketing line—What's in your wallet?—took on new meaning after the U.S. Securities and Exchange Commission alleged two bank employees used their access to credit card data to make a $2.8 million stock market profit.

The SEC complaint says Bonan Huang and Nan Huang, credit card fraud analysts at the bank, sifted through transaction data for specific retailers and then placed options trades ahead of earnings announcements. The two were fired by Capital One on Jan. 16. Their lawyer didn't respond to requests for comment.

Peter Henning, a professor at Wayne State University and a former SEC attorney, says they might have avoided scrutiny if they had kept the trades smaller. Their use of credit card data was interesting, he says, and their downfall mundane: "Greed will betray you." **SOPHIA PEARSON**

FROM THE SEC COMPLAINT

FEB. 7–12, 2014
- Defendants search card data for Cabela's sales.

FEB. 12
- Cabela's shares close at $69.81.
- Defendants buy put options.

FEB. 13
- Cabela's releases disappointing sales report.
- Shares close at $64.26.
- Defendants close options positions.

TOTAL PROFIT $109,400

CLOCKWISE FROM TOP: COURTESY OF SOTHEBY'S; ILLUSTRATION BY JASON LEE; COURTESY OF WILEY; BILL PUGLIANO/GETTY IMAGES

"I got the buzz in my stomach that can either lead to years of ulcers or butterflies of elation."

*—**Hugh Bonneville**, the actor who plays **Lord Grantham** on Downton Abbey, on watching his Highclere horse, Gothic, race. He's been a shareholder since 2012.*

A Piece of the Action

Buying a share of a thoroughbred will give you something to root for at the track and maybe even net you a tidy profit.

HARRY HERBERT GREW UP ON THE grounds of Highclere Castle—aka the real Downton Abbey. And while he's a self-effacing Brit who doesn't like to brag about the family pile, he's made a name for himself in an altogether different world: the horse-mad set.

Herbert runs Highclere Thoroughbred Racing, a syndicate that puts racehorse ownership within the reach of the simply rich rather than just the fabulously wealthy. For as little as £6,950 ($10,450), you can own a share in a racehorse managed by Herbert and his handpicked team of trainers. "It's like acting as personal racing manager to each and every shareowner," says Herbert, whose father was Queen Elizabeth II's racing manager for nearly 40 years. "This is a way to start people in owning racehorses."

Now, Herbert is exporting his brand of racehorse ownership to the U.S. with Highclere America. The goal: to buy proven British and European horses and fly them across the pond to run in U.S. races, where prize pots can be 10 times what's up for grabs at English races. Together with his U.S. partner, Bradley Weisbord, Herbert bought a filly called Cay Dancer in September and sold shares in her to a group of five U.S. investors. They plan to run her at a series of East Coast races this spring.

Herbert, who started Highclere Thoroughbred in 1992, cautions that owning a piece of a racehorse isn't about getting a return on your money, as only about 20 percent of his syndicates have made a profit or broken even. "It's not an investment," he says. "Quite the contrary! This is to enjoy the horses and the experience." Shareholders, he points out, also gain access to the exclusive world of English racing, including badges for access to the Parade Ring at Royal Ascot.

Not that you can't back a winner. During the past two decades, Highclere thoroughbreds have won £6.6 million in prize money, which gets divided among the horse's shareholders. A few have also generated outsize profits. Take Harbinger. Bought as a yearling in 2007 for £189,000 by a 12-member syndicate, the horse went on to win almost £800,000 in prize money. When the syndicate sold Harbinger in 2010 for a multimillion-pound figure, the 12 owners—who had paid just £36,500 a share to cover purchase and training—pocketed £400,000 each tax-free, a quirk of the U.K.'s racehorse gaming laws. And that was after Herbert's fee, which is 10 percent of the sale price of any horse sold for more than twice its purchase price.

"We manage aggressively," says Herbert, who hopes his approach and aristocratic touch may help him as he enters the high-stakes world of American racing. "It's about maximizing the value of the horses and selling them at the right time."

STEPHANIE BAKER

ALAMY

ILLUSTRATION BY **MATT DARTFORD**

$1 spent to fortify infrastructure saves $4 in cleanup costs when extreme weather hits, according to Rep. Scott Peters, a Democrat from California

Boom Time in the Vineyards

Bordeaux's Château d'Issan fires cannons as storms approach to prevent hail from prematurely crushing its grapes.

AFTER GOLF BALL–SIZED hailstones battered vines at Château d'Issan in Bordeaux for two years in a row, managing director Emmanuel Cruse was in the market for something—anything—that might protect his grapes. That's when he decided to try a device that promises to prevent hailstones from forming. Different types of hail cannons, as they're known, have been around for more than a century in France, even though it's far from clear they do what they're supposed to do.

"We had to do something," Cruse recalls. "Storms destroyed 70 percent of our grapes in 2008 and 2009. Each of those years, we produced less than 6,000 cases of wine," compared with the typical 19,000 cases. The total financial loss to this third-growth estate in the Margaux *appellation* was almost €3 million ($3.4 million), Cruse says. Insurance paid out just one-fifth of that.

This illustration of a hail cannon appeared in a French newspaper circa 1900.

So Cruse invested €150,000 in two cannons that are now permanently installed in his vineyards. They're linked to a radar system that automatically sets them off when it detects an approaching storm. A blast—a loud boom followed by a reverberating whistling sound—goes off every four to six seconds. Cruse gives his neighbors cases of wine to make up for the noise pollution.

Hailstones develop in large, high clouds when warm storm updrafts suck rain into the upper air's freezing temperatures. Supercooled drops collect around tiny ice crystals or bits of dust and become big enough to fall without melting.

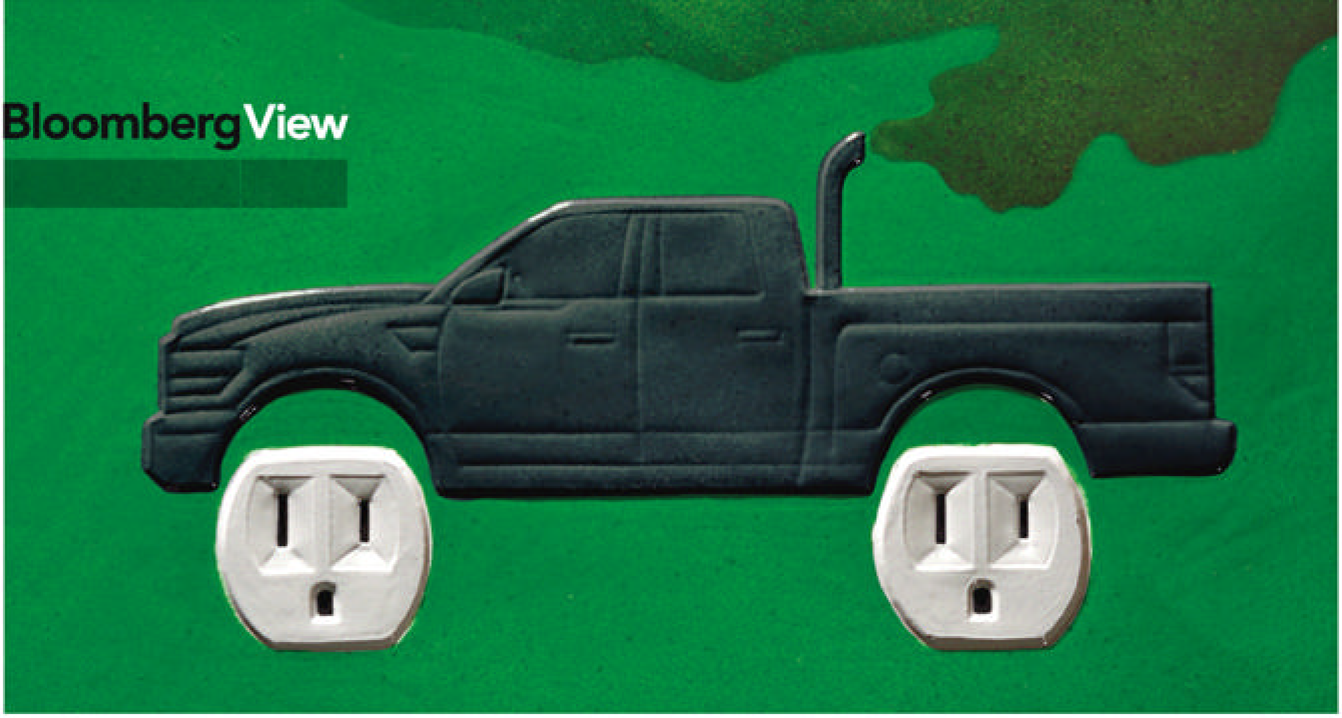
While the original hail cannons fired gunpowder-fueled blasts skyward, modern versions work off of a charge of acetylene gas and air. They generate a series of high-velocity vortex shock waves inside storm clouds, says Newton Wimer, whose California-based Newton Systems International makes the devices. The moisture in the cloud falls as a kind of benign slush or rain—at least that's the claim.

Brant Foote, director of the Research Applications Laboratory at the National Center for Atmospheric Research in Boulder, Colorado, who's spent his career studying hail, is dubious. He says of the cannons, "There's zero scientific evidence that they're effective." He's also skeptical of an alternative technology that shoots silver iodide into clouds to create smaller hailstones that will melt as they fall. That practice didn't prevent Burgundy vineyards from being hammered last summer. Winemakers there are talking about trying the anti-hail nets that are used in Argentina.

Is Cruse convinced the technology behind his booming cannons is sound? He says it's possible his vineyards have been hail-free for five years—even as close neighbors have been hit—simply due to luck. And he still pays €30,000 a year for insurance "just in case," he says. That said, he'll have his hail devices fueled up and ready when storm season comes again.

ELIN McCOY

FROM TOP: SHUTTERSTOCK; LEEMAGE/UIG VIA GETTY IMAGES



The Electric Car Credit Charade

Vehicles like the Tesla Model S are a plus for the environment. But the system of allowances from which Tesla benefits distorts the government effort to reduce emissions.

ELON MUSK, all-purpose impresario of the future, is enthusiastic about electric cars. Eventually, "all cars will go electric," he says in "Will Tesla Ever Make Money?" on page 38.

As the CEO of Tesla Motors, he would say that. But he has some evidence on his side. Electric cars are culturally modish. They're by most accounts fun and safe to drive. And their sales have held up recently, even as the price of oil has sunk.

One problem: The success of electric cars generally—and of Tesla in particular—is due in no small part to a government mandate. And that mandate is distorting the auto market without clear evidence that it's going to achieve its stated purpose.

Tesla benefits from something called zero-emission-vehicle credits. Pioneered in California and adopted by nine other states, the policy will impose fines on large automakers this year unless ZEVs account for at least 4 percent of their sales, rising to 15.4 percent for 2018 models. Companies that exceed the mandate get credits they can sell to their noncompliant competitors. For Tesla, each new sale brings multiple credits, adding up to a windfall for each Model S sold.

This policy is clever, well-intentioned, and wrongheaded.

For one thing, it works at cross-purposes with federal fuel-economy standards. Those standards require a manufacturer's entire fleet to exceed an average-miles-per-gallon threshold. But when an automaker sells an electric vehicle, the government credits it against this overall average twice. Because of this double credit, the permissible fuel-efficiency of the fleet is allowed to drop by a greater amount than what the fleet gains from an additional electric vehicle. So when California mandates that an automaker sell a ZEV, it effectively reduces the entire country's fuel-efficiency.

And that mandate may not even make sense on its own terms. Whether electric cars contribute less to climate change than efficient gas-powered ones isn't as obvious as you might think. It depends on variables such as what time of day they're charged and the makeup of the local power grid. If much of the electricity used to charge them originates as coal, then their benefits quickly dissipate.

Because electric is, at present, essentially the only practical way of meeting the mandate, California is effectively forcing automakers to bet on an extremely expensive method of fighting climate change whose value is questionable.

A better approach is to continue tightening federal fuel-efficiency standards and to reduce their perverse bias in favor of larger vehicles. Better still would be a carbon tax, which would give customers an incentive to buy more-efficient cars while harnessing the power of the market to encourage innovation. That's more politically feasible than you may think, and it's the consensus choice among economists for fighting climate change.

As appealing as a new Tesla is—and with apologies to Elon Musk—it's not going to save the world by itself. Governments should stop pretending it will.

BY THE EDITORS OF BLOOMBERG VIEW
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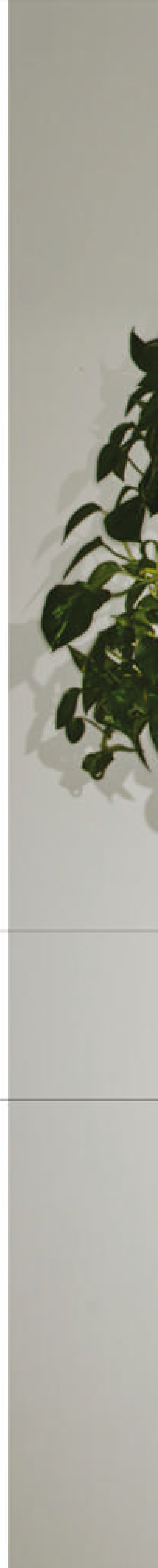
ILLUSTRATION BY ALEX NABAUM

GOOGLE VENTURES AND THE SEARCH FOR IMMORTALITY

BY KATRINA BROOKER PHOTOGRAPH BY IAN ALLEN



Bill Maris in the Google Ventures offices. His firm's sole limited partner is the world's largest search company.

BILL MARIS HAS $425 MILLION TO INVEST THIS YEAR, AND THE FREEDOM TO INVEST IT HOWEVER HE WANTS. HE'S LOOKING FOR COMPANIES THAT WILL SLOW AGING, REVERSE DISEASE, AND EXTEND LIFE.

"IF YOU ASK ME TODAY, IS IT POSSIBLE TO LIVE TO BE 500? THE ANSWER IS YES,"

Bill Maris says one January afternoon in Mountain View, California. The president and managing partner of Google Ventures just turned 40, but he looks more like a 19-year-old college kid at midterm. He's wearing sneakers and a gray denim shirt over a T-shirt; it looks like he hasn't shaved in a few days.

Behind him, sun is streaming through a large wall of windows. Beyond is the leafy expanse of the main Google campus. Inside his office, there's not much that gives any indication of the work Maris does here. The room is sparse—clean white walls, a few chairs, a table. On this day, his desk has no papers, no notepads or Post-its, not even a computer.

Here's where you really figure out who Bill Maris is: on his bookshelf. There's a fat text called *Molecular Biotechnology: Principles and Applications of Recombinant DNA*. There's a well-read copy of *Biotechnology: Applying the Genetic Revolution*. And a collection of illustrations by Fritz Kahn, a German physician who was among the first to depict the human body as a machine. Wedged among these is a book that particularly stands out to anyone interested in living to 500. *The Singularity Is Near: When Humans Transcend Biology*, published in 2005, is the seminal work by futurist Ray Kurzweil. He famously predicted that in 2045, humankind will have its Terminator moment: The rise of computers will outpace our ability to control them. To keep up, we will radically transform our biology via nanobots and other machines that will enhance our anatomy and our DNA, changing everything about how we live and die.

"It will liberate us from our own limitations," says Maris, who studied neuroscience at Middlebury College and once worked in a biomedical lab at Duke University. Kurzweil is a friend. Google hired him to help Maris and other Googlers understand a world in which machines surpass human biology.

This might be a terrifying, dystopian future to some. To Maris, it's business. This is where he hopes to find, and fund, the next generation of companies that will change the world, or possibly save it. "We actually have the tools in the life sciences to achieve anything that you have the audacity to envision," he says. "I just hope to live long enough not to die."

* * *

MARIS IS AN UNUSUAL GUY WITH AN unusual job. Seven years ago, Sergey Brin and Larry Page, the founders of Google, tapped him to start a venture capital fund, putting him smack between those tech titans and the sea of ambitious entrepreneurs trying to be just like them. At the time, he was a young entrepreneur himself, with limited investing experience and no clout in Silicon Valley. He'd sold his Vermont-based Web-hosting company and was working at a nonprofit, developing technology for cataract blindness in India. This made him exactly the kind of outsider Google was looking for. "Bill was ready to come at this from an entirely new perspective," says David Drummond, who, as Google's chief legal officer and senior vice president of corporate development, oversees Google Ventures as well as the company's other investment vehicles.

Google Ventures has close to $2 billion in assets under management, with stakes in more than 280 startups. Each year, Google gives Maris $300 million in new capital, and this year he'll have an extra $125 million to invest in a new European fund. That puts Google Ventures on a financial par with Silicon Valley's biggest venture firms, which typically put to work $300 million to $500 million a year. According to data compiled by CB Insights, a research firm that tracks venture capital activity, Google Ventures was the fourth-most-active venture firm in the U.S. last year, participating in 87 deals.

A company with $66 billion in annual revenue isn't doing this for the money. What Google needs is entrepreneurs. "It needs to know where the puck is heading," says Robert Peck, an analyst at the investment bank SunTrust Robinson Humphrey, who published a report in February examining Google's outside investment units, including Google Ventures. "Look at what happened to BlackBerry when it missed the advent of smartphones. And Yahoo! missed Facebook."

Google puts huge resources into looking for what's coming next. It spends millions on projects like Google X, the internal lab that developed Google Glass and is working on driverless cars. In January, the company made a $900 million investment in Elon Musk's SpaceX. (For more on Musk, see "Will Tesla Ever Make Money?" on page 34.) In 2014, it started Google Capital to invest in later-stage technology companies. Maris's views on the intersection of technology and medicine fit in well here: Google has spent hundreds of millions of dollars backing a research center, called Calico, to study how to reverse aging, and Google X is working on a pill that would insert nanoparticles into our bloodstream to detect disease and cancer mutations.

Maris has a peculiar position in the Googlesphere. He's a part of it, but also free from it. Google Ventures is set up differently than most other in-house corporate venture funds—Intel Capital, Verizon Ventures, and the like. The firm makes its investments independent of its parent's corporate strategy. It can back any company it wants, whether or not it fits with Google's plans. The fund also can sell its stakes to whomever it wants, including Google competitors. Facebook and Yahoo have bought startups funded by Google Ventures.

With Google's money and clout behind him, Maris has a huge amount of freedom. He can, and does, go after Silicon Valley's most-sought-after startups. Uber, Nest, and Cloudera are among the firm's big wins.

Maris doesn't intend to stop pursuing these kinds of deals. But he has other ambitions, too. "There are plenty of people, including us, that want to invest in consumer Internet, but we can do more than that," he says. He now has 36 percent of the fund's assets invested in life sciences, up from 6 percent in 2013.

"There are a lot of billionaires in Silicon Valley, but in the end, we are all heading to the same place," Maris says. "If given the choice between making a lot of money or finding a way to make people live longer, what do you choose?"

★ ★ ★

MARIS IS STANDING AT THE FRONT of Joshua Tree, Google Ventures' large conference room. Each room at headquarters is named after a national park. "OK, we have a lot to get through today," he tells his staff. The group meets here biweekly to talk about prospects and strategy.

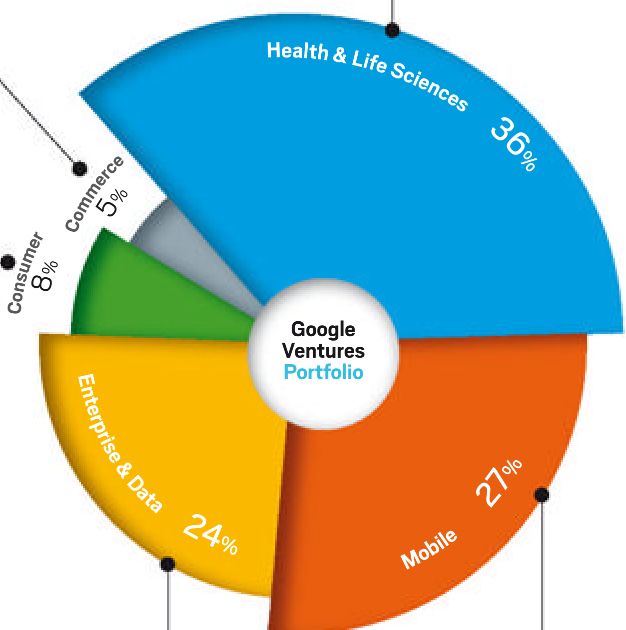
Maris has a team of 70, most of whom are in the room this day or patched in by phone or video. The group includes the fund's 17 investing partners, who are in charge of finding startups. Among the investing partners are Joe Kraus, co-founder of Excite; Rich Miner, co-founder of Android; and David Krane, employee No. 84 at Google.

The mood in the room is casual. Some staffers sit cross-legged on the floor; others curl up on soft felt couches. There are a lot of jokes. One partner starts his presentation with a slide entitled "Secret Project"—which most people in the room already know about—and concludes it with a doctored-up photo of Maris's head superimposed on the body of someone playing tambourine. It's a jab at the boss, who married the singer-songwriter Tristan Prettyman last August and recently went on tour with her. Everyone laughs. Maris smiles, but immediately he's back to business. "Time is the one thing I can't get back and can't give back to you," he says, turning to an agenda on the screen behind him.

"I know you're all aware of the conference happening this week," Maris says. An hour away in San Francisco, JPMorgan Chase is hosting its annual health-care confab, nicknamed the Super Bowl of Health Care. Thousands of pharmaceutical executives and investors have gathered for what has become a huge part of the industry's dealmaking. Most of Google Ventures' life sciences startups are attending. One, Foundation Medicine, which uses genetic data to create diagnostic oncology tools, is generating huge buzz this year. In January, Roche Holding announced plans to take a majority stake in the company,

A WIDE NET

The five categories of investments in the $2 billion Google Ventures portfolio, with one high-visibility company in each category.



FLATIRON

ONCOLOGY DATA PLATFORM

INVESTMENT: Led a round of **$130 million** in 2014. Flatiron Health is the firm's largest life-sciences bet.

HomeAway

VACATION RENTAL MARKETPLACE

INVESTMENT: Made a reported **$25 million** investment in 2010 at a $1.4 billion valuation. The company went public in 2011 and now has a $3 billion market cap.

nest

HOME AUTOMATION TECHNOLOGY

INVESTMENT: Among seven VC firms that put in a total of **$80 million**, according to CrunchBase. Google bought the company for $3.2 billion in 2014.

cloudera

BIG-DATA MANAGEMENT SOFTWARE

INVESTMENT: Participated in a **$160 million** round in March 2014. Two weeks later, Intel Capital put in $740 million.

UBER

CAR SERVICE APP

INVESTMENT: Took a stake when the company was valued at $3.5 billion. It's now valued at $40 billion.

As of Feb. 24.
Source: Google Ventures

in a transaction valued at $1 billion. The stock more than doubled the next day. Google Ventures has a 4 percent stake in the company.

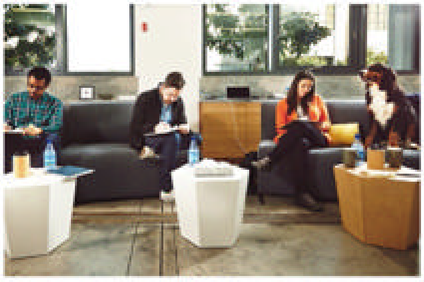
For Maris, Foundation Medicine represents the beginning of a revolution. "The analogy I use is this," he says, holding up his iPhone 6. "Even five years ago, this would have been unimaginable. Twenty years ago, you wouldn't have been able to talk to anyone on this."

When Google Ventures invested in Foundation in 2011, the company's promise was mostly theoretical. The world was still waiting for the breakthroughs that have seemed inevitable ever since scientists first mapped the human genome in 2003. Foundation's team included eminent geneticists, including Eric Lander, one of the leaders of the Human Genome Project. Still, the company had no viable commercial product.

Technology has made huge strides since then, allowing Foundation to create products like its Interactive Cancer Explorer, which is a kind of Google for oncologists, allowing them to do research and devise treatments for their patients. "We had a lot to learn from the experts in Silicon Valley," says Foundation's CEO, Dr. Michael Pellini, who sought out Google Ventures as an investor for help with designing his company's technology. "Think about Google search. We never think about all the algorithms that go behind what we see on the screen. They were able to do the same for us with genetic information."

"Twenty years ago, without genomics, you could only treat cancer with a poison," Maris says. "That's really different from, 'We can cure your cancer by reverse-engineering a stem cell.' You can now legitimately invest in a company that could cure cancer."

Identifying promising life sciences companies isn't like hunting around Silicon Valley for coders with a cool app. Biotech companies are built around complicated science. They require millions of dollars in investments, partnerships with big pharma companies, and lengthy clinical trials. To help with his hunt, Maris has brought in scientists as partners. One, Dr. Krishna Yeshwant, a Harvard- and Stanford-trained doctor, still works in a clinic twice a week in Boston, where he is based. Last year, he led the firm's biggest bet in life sciences, an investment in Flatiron Health, which is building a cloud platform to analyze cancer data.



A group from **Slack** goes through a **design sprint** with the Google Ventures design team. In the orange pants is **Jake Knapp**, who runs the sprints.

ON THE CLOCK

"So what's keeping you up at night?" asks Jake Knapp, a design partner at Google Ventures. He's talking to Mike Maser, co-founder of FitStar, a producer of workout apps. Maser looks a bit stressed. Users are downloading one of his new workouts but not sticking with it. He's hoping Google Ventures, which has invested in his company, can help him and his team fix that. Maser is about to put FitStar through what Google Ventures calls a design sprint.

Google Ventures has a design crew of five, and they're good at what they do. Knapp was a design "vigilante" at Google, Braden Kowitz used to lead design at Gmail, and Daniel Burka co-founded several companies before leading mobile user experience at Google+. "Daniel is one of the best designers in the world," declares Stewart Butterfield, co-founder of Flickr, who used the Google Ventures team in February to help his new startup, Slack, a workplace chat room.

A sprint runs like a five-day commando operation. The first two days are a lightning round of brainstorming. Knapp—who walks around with a large timer to keep the pace moving—hands out Post-its, scribbles on walls, calls on just about everyone for ideas. He asks all present to formulate questions that start "How might we ..." and finish them with whatever pops into their minds. By midweek, the goal is to have one pressing problem to focus on and start building its solution—a new prompt on a website, a video, new features for an app. On the final day, a focus group of target users comes in to test whatever prototype the team has built.

More than handing over a quick fix, the design team tries to show startups how to reuse the techniques Google Ventures has developed in running more than 80 sprints. "They teach you to fish," says Maser.

KATRINA BROOKER

PHOTOGRAPHS BY **CODY PICKENS**

This is just the beginning. "In 20 years," Maris says, "chemo will seem so primitive it will be like using a telegraph."

★ ★ ★

AT THE AGE OF 22, JUST OUT OF college, Maris met the friend who would lead him to Google. It was 1997: Yahoo was search, AOL was e-mail, Google was called BackRub. Maris was in New York, working at Investor AB, a Swedish investing firm. He didn't care for Wall Street, but he did like the smart Yale grad sitting next to him. She told him about a company that was going to change the world. "I remember telling him about this new search engine my sister was working on, and he said, 'Oh, Yahoo is good enough,'" recalls Anne Wojcicki, who would become the wife of Sergey Brin. Her sister Susan, one of Google's earliest employees, is now CEO of YouTube. Anne Wojcicki went on to co-found 23andMe, a genetics testing company that is part of Google Ventures' portfolio.

Maris quit Investor AB after six months and went to Burlington, Vermont, to start a Web-hosting company. He was so green that he read *Netscape and the World Wide Web for Dummies*. He funded his company, Burlee, with his credit cards and by convincing the operators of the Lake Champlain ferry to invest. Maris sold Burlee to a company that became Web.com for an undisclosed sum in 2002. It wasn't Google-level money, but it was enough for him to live on in Vermont with no job.

He would have stayed there except that his old friend, Wojcicki, kept calling him West. Maris started visiting her and Brin, staying at their home in California. He increasingly became drawn into their sphere. "He and Larry and Sergey would be at dinner and start talking about, I don't know, flying cars," recalls Wojcicki.

In 2008, Google's chiefs tapped Maris to start a venture fund, an idea they'd been kicking around for a while. They gave him a desk at Google and instructions to figure out how he would invest Google's money. In an only-at-Google twist, his neighbor was Kevin Systrom, who was working on a photo app called Burbn, later Instagram. ("Everyone I sit next to ends up becoming a billionaire," Maris jokes.)

Maris spent six months researching venture capital around Silicon Valley. He traveled up and down Sand Hill Road, home to many of the Valley's most prestigious VC firms, asking top investors for advice. At first, he had a hard time getting anyone to take him seriously. During one meeting, a VC started laughing at his idea for Google Ventures.

Maris was told his fund would never work: VCs wouldn't want Google looking over their shoulders. "There were some in the venture world who weren't particularly welcoming to Bill or Google Ventures," recalls John Doerr, a legendary partner at Kleiner Perkins Caufield & Byers, one of the most important first-generation California VC firms. Doerr, who sits on Google's corporate board, advised Maris on setting up the venture fund.

Around Silicon Valley, corporate venture funds have a bad reputation. "There is an inherent paradox to the notion of corporate venture," says Bill Gurley, a general partner at the VC firm Benchmark Capital. The conflict is, do the fund's loyalties lie with the startup or with the parent? Just about every independent venture capitalist in tech has stories of being burned by corporate funds. Either the company uses its venture investments to gather intelligence and ends up competing with the companies it funds or company management loses interest at some point and pulls out.

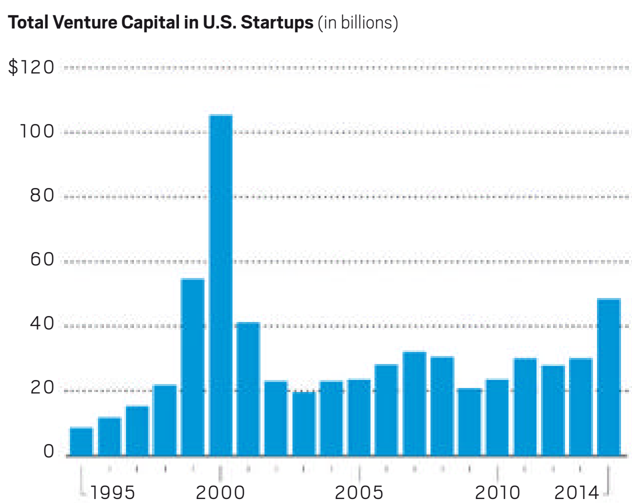
Entrepreneurs were skeptical, too. "I told him, this is never going to work," says Joe Kraus, who, in addition to co-founding Excite, co-founded a wiki software company called JotSpot, which was sold to Google. Maris asked him early on to join as a partner in Google Ventures. "From the entrepreneur's perspective, the idea of tying myself to Google would have been scary." Kraus says. "The fear would be, if you raised money from Google, would Apple hate you?"

To win over other VCs and entrepreneurs, Maris and his bosses at Google established the terms under which the fund still operates. Google has no access to details about the startups' strategy or technology. That way, entrepreneurs can pitch without worrying about their ideas being stolen. "We had to convince entrepreneurs they could work with us," says David Drummond.

Those who can get comfortable with Google Ventures gain access to resources no amount of money can buy. The firm can, and does, introduce its startup founders to anyone at Google—experts on

COMING BACK

Last year, VC firms invested more money in U.S. companies than in any year since 2000—the height of the tech bubble.



Source: National Venture Capital Association

ENTREPRENEURS WHO CAN GET COMFORTABLE WITH GOOGLE VENTURES GAIN ACCESS TO RESOURCES NO AMOUNT OF MONEY CAN BUY.

rankings on Google search, for example, or user experience designers or Android mobile-app builders. One startup was offered 1 million hours of core processing time on the Google cloud for free.

A big edge for Google Ventures is its design team. Maris drew top tech talent out of Google and made them partners in the fund. One worked on Gmail; another helped redesign YouTube. They form a sort of SWAT team for startups. In what's known as a design sprint, they can troubleshoot whatever is ailing a startup—a flailing app, slow Web traffic, an uninspiring home page. (See "On the Clock," page 30.)

"We didn't need the money," says Ryan Caldbeck, co-founder of the crowdfunding startup CircleUp. He picked Google Ventures as one of his backers in part to gain access to its design talent. Twitter co-founder Ev Williams used the design team for his new publishing platform, Medium. Stewart Butterfield, co-founder of Flickr, used the team for his new startup, Slack.

Still, navigating the line between startups and Google can get complicated. Last year, Google wanted to buy Nest, whose signature product is a WiFi-connected, learning home thermostat. Google Ventures recused itself from the negotiations, allowing the other VC firms invested in Nest to broker a price of $3.2 billion. (It was the fourth-largest venture exit of 2014.) In February, Bloomberg reported that Google was planning a ride-sharing app that would be a direct competitor to Uber. Google Ventures has had a stake in Uber since 2013. If Google and Uber go to war, Maris will be right in the middle of it.

"Google Ventures has a direct financial incentive to ensure the companies we invest in succeed," Maris said in an e-mail responding to questions about potential conflicts. "Our investment decisions are made independent of Google's product road map." He and the other partners are paid carried interest based on the performance of portfolio companies. In theory, if Google's car app kills Uber, Google Ventures loses money.

★ ★ ★

ONE EVENING IN SAN FRANCISCO, A group of young scientists and doctors are sitting down to dinner. "I remember when Max was living with me and I opened up my fridge and saw this stuff he put in there. I was thinking, Is this safe?" muses Blake Byers, a 30-year-old with a Ph.D. in bioengineering from Stanford and a partner at Google Ventures. He casts a sideways glance at Max Hodak, a 25-year-old Duke biomedical engineering grad sitting next to him. Three years ago, Hodak started working in Byers's garage to build a robot-enabled laboratory. Once he stored chemicals in Byers's freezer. ("Blake gets a little carried away with that story," says Hodak. "There was never any danger.")

Hodak now runs Transcriptic, a company that builds and operates robot-run labs in shipping container–sized boxes. It packs them with enough computing power to run multiple experiments from anywhere in the world. Theoretically, a scientist in Monrovia, Liberia, with access to a laptop or a mobile phone could use a Transcriptic lab to test strains of Ebola. Byers, who is the son of Brook Byers of Kleiner Perkins, has helped Hodak raise $12.5 million from Google Ventures and others.

"We are just on the verge of what science and technology can do," says David Shaywitz, chief medical officer of DNAnexus, who's seated across from Byers and Hodak. His company, also backed by Google Ventures, is building a global bank of genomic information using cloud computing.

Listening to the scientists gathered around the table, it's hard not to get caught up in the world they see coming. In this vision of our future, science will be able to fix the damage that the sun or smoking or too much wine inflicts on our DNA. Alzheimer's, Parkinson's, and other scourges of aging will be repaired at the molecular level and eradicated. In the minds of this next generation of entrepreneurs, the possibilities are bizarre and hopeful and endless. We probably won't live forever, but we could live much longer, and better.

These are the bets Google Ventures is hoping will ultimately be its biggest wins. "We aren't trying to gain a few yards," Maris says. "We are trying to win the game. And part of it is that it is better to live than to die."

Katrina Brooker is a senior writer at *Bloomberg Markets* in New York. kbrooker7@bloomberg.net

BLOOMBERG TIPS

Tracking Google Ventures' Deals

You can use the Private Equity Overview (PE) function to find information on Google Ventures' deals. Type **PE <Go>** on the Bloomberg Professional service. Enter *GOOGLE* in the field and click on Google Ventures (PE General Partner) in the list of matches. On the screen that appears, click on Recent Deals (MA) for a list of transactions. For details of Google Ventures' investment in Foundation Medicine, enter *FOUNDATION* in the SEARCH field in the upper-left corner of the screen and click on the top match. To view companies that compete with Foundation, type **FMI US <Equity> CCB <Go>**. JON ASMUNDSSON

WILL TESLA EVE

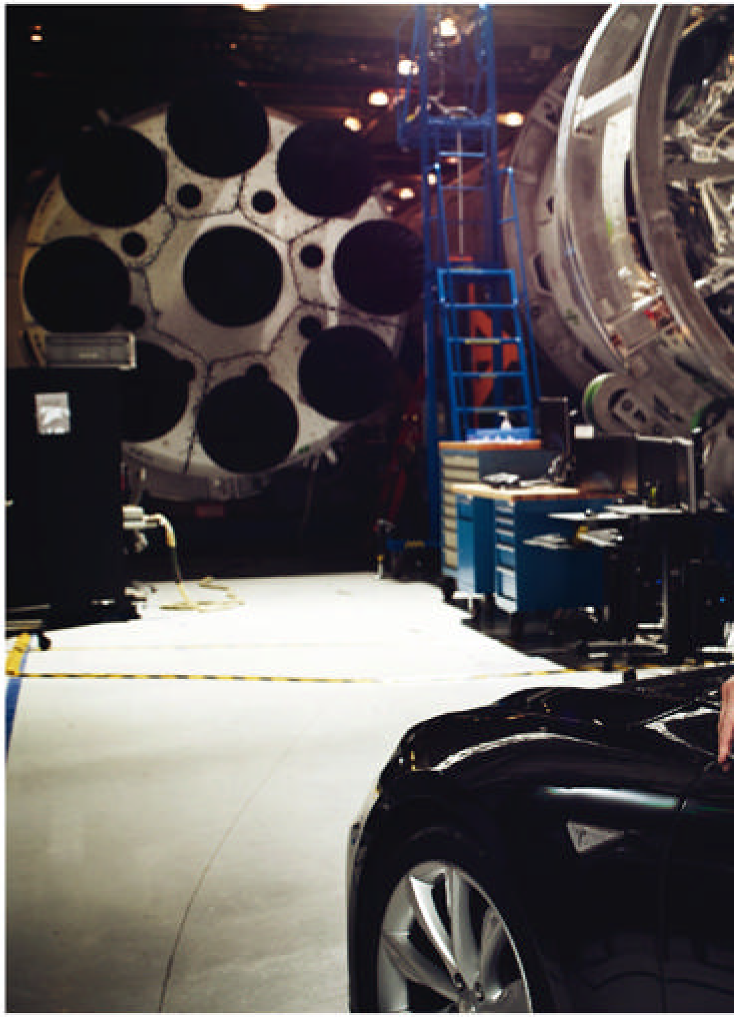
A Model S door awaits assembly at Tesla's Fremont, California, plant. The company is gearing up for the mass market by increasing automation.

R MAKE MONEY?

SURE, **ELON MUSK** BUILDS GREAT CARS, BUT INVESTORS ARE WONDERING WHEN HIS COMPANY WILL TURN A PROFIT.

BY JOHN LIPPERT

PHOTOGRAPHS BY MISHA GRAVENOR



JOE PUGLIESE/AUGUST

Chris Ziegler presses the pedal of his Tesla Model S. It surges forward silently and instantly—unlike gas-powered cars that roar and gulp for air before accelerating. Driving in the

hills north of Los Angeles, he whips through hairpin turns without worrying about flipping over. Thirteen hundred pounds of batteries under the floorboard make that nearly impossible.

Ziegler loves everything about his all-electric, $107,000 Tesla, including that he recharges its batteries using solar panels in the trees above his house. That lessens his contribution to climate change and his dependence on oil from the Persian Gulf—which Ziegler patrolled as a Navy gunnery operator in 1983. "I'm stunned major automakers haven't fired back with a product to compete with Tesla," says Ziegler, 49, a real estate project manager in the L.A. suburb of Monrovia. The license plate on his Model S reads "Waat Gas."

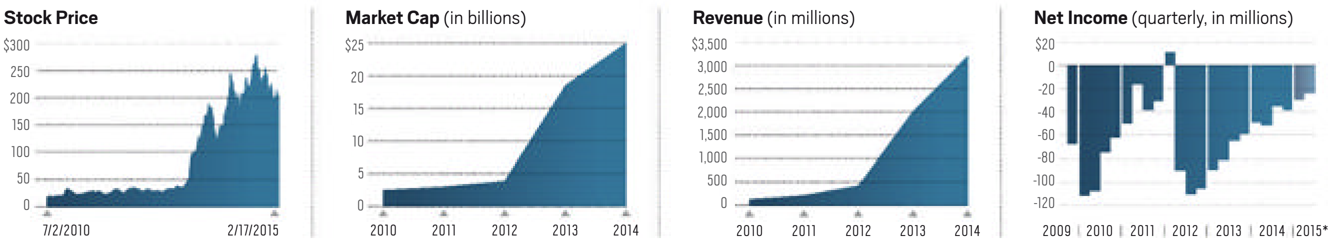
Ziegler is so convinced the Tesla is the car of the future that he and his wife, Barbara, a sales executive for an institutional investment firm, invested 90 percent of their liquid assets in its shares beginning in 2010, when they sold for $16. Barbara also earned hundreds of thousands of dollars trading options against investors who thought Tesla would fail, she says.

Tesla, of course, hasn't failed. Rather, CEO Elon Musk says it's leading the world into a future without gasoline. Already going toe-to-toe with competitors such as BMW and Mercedes-Benz, he wants to take Tesla cars to the mass market—and push forward the process of freeing the world from its dependence on fossil fuels. Eventually, he said at a press conference in January, "all cars will go electric."

Yet there are plenty of skeptics who question whether Tesla will ever be capable of competing with the Toyotas and General Motors of the world—or get out of the red any time soon. Since its founding in 2003, the company, which went public in 2010, has earned a profit in just one three-month period. In 2014, it lost $294 million on $3.2 billion in revenue. Some $217 million of that revenue came from the sale to its competitors of zero-emission-vehicle,

GREAT EXPECTATIONS

While many of Tesla's metrics have been soaring, net income has been mostly negative. Musk says Tesla will see positive cash flow in the second half of 2015 and annual profits by 2020.



*Estimated. Source: Bloomberg

Musk at the SpaceX rocket factory in Hawthorne, California, in 2013

or ZEV, credits and other pollution allowances.

"You're talking about a company with no cash flow," says Matthew Stover, an analyst at Boston-based Susquehanna Financial Group, which in the three months ended on Jan. 31 sold more than half its 1.5 million Tesla shares. "One hundred percent of the value of the shares is associated with some view of the future that has not manifested itself in the past."

In a Feb. 11 conference call with investors after releasing Tesla's fourth-quarter financial statements, Musk, 43, predicted the company would have positive cash flow by the third quarter of this year. He has also forecast that Tesla will be making a full-year profit under generally accepted accounting principles by 2020.

Stover isn't the only investor skeptical of Tesla's prospects—and of its stock price, which at $204 on Feb. 17 valued the company at $25.6 billion. (That's 40 percent of the market capitalization of Ford, which last year sold 6.3 million vehicles, almost 200 times as many as Tesla.) As of Feb. 13, 26.8 percent of Tesla's shares had been sold short, with more investors betting on their decline than for any other company in the Bloomberg Intelligence Global Automobiles Valuation Peers Index.

Musk says Tesla could match Apple's February market cap, $700 billion, in 10 years.

The naysayers haven't dented Musk's confidence. On the Feb. 11 conference call, he said that in 10 years Tesla could match the market cap of Apple, which in mid-February was the world's most valuable company, worth more than $700 billion. In a February letter to shareholders, he wrote that vehicle deliveries would increase by 70 percent this year and that there would be a "significant" increase in what he called non-GAAP income, a calculation that takes into account factors such as lease payments and deferred stock options.

Tesla—named for Nikola Tesla, who designed alternating-current power systems in the 19th century—offers buyers just one product, the Model S, of which it sold 31,655 in 2014 at a price that started at $71,000. The company will introduce a gull-wing SUV late this year, also priced at around $70,000, and then target middle-income consumers with a $35,000, 200-mile-range (320-kilometer-range) car called the Model 3 in 2017. Musk forecasts he'll make 500,000 vehicles by 2020 at his Fremont, California, factory, equipping them with batteries from a massive plant dubbed the Gigafactory that he's building with Panasonic in the Nevada desert.

Even supporters question whether Musk can meet his targets. Morgan Stanley auto analyst Adam Jonas is a Tesla enthusiast yet predicts the average Model 3 will cost $60,000 and that Tesla will sell 319,000 cars a year by 2020. He thinks that even at the lower number Tesla can make money and lead innovation in the global auto industry. Jonas has an overweight rating on the shares.

Susquehanna's Stover says that the Tesla share price—it peaked at $291 in September before falling in tandem with oil prices—suggests investors already regard the Model 3 as a hit. "Since nothing can happen for two years to validate that view, the market will simply be guessing," Stover says.

Tesla's debt is no less popular than its shares. In February 2014, investors bought $2.3 billion of Tesla convertible notes with coupons of 1.25 percent or less—a smaller return than U.S. inflation. The bonds won't convert to shares—and provide a bigger return to investors—unless the stock reaches $359.87.

If the past is prologue, the Model 3 will be late; it's already about two years past its original launch date, as is the SUV, dubbed Model X. And analysts say there is no guarantee that Musk's battery factory—which he predicts will dramatically reduce the cost of the Tesla's most crucial component—will live up to expectations. The plant will supply batteries for two businesses that are in their infancy: Tesla vehicles and solar power systems being built by another company he founded, SolarCity.

Tesla doubters point out that once the Model 3 comes to

market, it will face a tsunami of competition. Virtually every major carmaker is producing or is on the verge of producing a ZEV, in part to meet rising emission standards of the federal government and the state of California.

No one doubts that, in the Model S, which Tesla introduced in 2012, Musk has created a vehicle that's hard to hate. The appeal is based on its ferocious performance and 265-mile driving range—the highest among electric cars. In October, Tesla launched a dual-motor version that goes from zero to 60 miles per hour in 3.2 seconds, half a second faster than a gasoline-powered Corvette. The Model S also has cozier features, like a 17-inch (43-centimeter) dashboard touchscreen. Drivers control nearly every function by swiping their fingers—just like on their iPhones. (It's no coincidence that several high-level Tesla employees were hired away from Apple, which is also researching automotive technology.) And the communication system enables Tesla owners to regularly download new capabilities, like a navigation system introduced in September that plans alternate routes based on traffic.

Among U.S. buyers, 96 percent say they love their Tesla's technology, according to a December survey by marketing consultant Strategic Vision, compared with 62 percent for Porsche and 55 percent for BMW.

Wall Street's love affair with Tesla is really a romance with the charismatic Musk, a South African–born entrepreneur who pronounces his company's name *TEZ-la*. He earned bachelor's degrees in economics and physics at the University of Pennsylvania and then dropped out of the Stanford University Ph.D. program in physics to join the Internet boom. He helped create PayPal in the 1990s and pocketed $165 million when EBay bought the company in 2002. By the time he joined Tesla in 2004, he had already launched rocket manufacturer Space Exploration Technologies, or SpaceX.

The Model X SUV, right, will debut later this year. Chris and Barbara Ziegler, below, plan to add it to their Tesla collection. They started buying the stock when it was $16.

TOP: COURTESY OF TESLA

A decade later, he's got a near-mythic reputation. "Elon Musk is our generation's Thomas Edison," says Joseph Fath, a fund manager at Baltimore-based T. Rowe Price Group. "He's the greatest inventor of all time," says Gwynne Shotwell, chief operating officer of SpaceX. "Elon will be the richest man who ever lived," says Scott Painter, CEO of TrueCar, a Santa Monica, California–based online auto-buying service.

T. Rowe Price started buying Tesla at $20, and the firm now owns 6 million shares scattered in half a dozen funds. Fath, who runs the Growth Stock Fund, says the shares will do OK even if the Model 3 is only a moderate success and could double if the car is a hit. "You don't often see large-cap stocks with this kind of significant disruptive potential," he says.

Max Warburton, a Sanford C. Bernstein & Co. analyst in Singapore, says Tesla's shares are priced less on the company's own financials and more on how it's forcing competitors to boost spending on electric cars. "Tesla is massively disruptive," Warburton says. "Its valuation reflects the $30 billion problem it's created for the rest of the car industry"—a reference to the amount he says other automakers will spend chasing Tesla.

Musk is even disrupting outer space. SpaceX has promised NASA, with which it has $4.2 billion in contracts, and satellite makers that the reusable rockets he's developing can deliver their payloads at a much lower cost than other companies. (See "Rocketing to Profits," page 41.)

In person, Musk is relaxed and soft-spoken, with blue-green eyes that dart around the room as he talks. He works long days at his various California offices—Tesla's headquarters is in Palo Alto; SpaceX's is in a Los Angeles suburb—and spends as much time as possible with his five sons in L.A. He's twice divorced.

In speeches and interviews, Musk shows little immediate concern for investors who've watched shares of alternative energy and related companies plunge with the price of oil. He insists his priority is popularizing electric cars. "We've certainly chosen high growth over profitability," he told reporters in September in Tokyo. "If the shareholders don't like me, they can just fire me."

If Musk's competitors don't always share his zeal for fighting climate change, they appreciate

An artist's rendering of the Nevada Gigafactory, where Tesla will make batteries

the cachet Tesla gives to the ZEV category. "The Tesla is a fantastic vehicle," says Raj Nair, head of global product development at Ford. "It's made the public more open to this type of propulsion."

At the Detroit auto show in January, Porsche said it was considering a plug-in electric version of its 911 flagship. Honda's Acura division unveiled an NSX supercar with three battery-powered motors and a gasoline engine. Audi, General Motors, Honda, Hyundai, Mercedes-Benz, and Nissan all spun out plans for battery-powered cars to compete with Tesla.

GM, Ford, and Renault buy their batteries from LG Chem Power, a unit of South Korea's biggest chemical company. CEO Prabhakar Patil says his company doesn't need a Gigafactory to compete with Tesla on costs. And he says Musk may be placing too big a bet on electric cars. No one knows, he says, whether fuel cells, plug-in hybrids, or battery-only cars will prevail.

Electric-car makers already have a cautionary tale to study. Nissan and its partner Renault committed $6 billion to their all-electric Leaf compact, including plans to manufacture 500,000 cars a year. In 2014, they sold 82,602. One factor in the car's disappointing sales is that it travels just 84 miles between charges. Tesla's Model S has helped reset the standard at 200 miles, auto executives say. "The batteries are getting lighter, cheaper, and smaller," Carlos Ghosn, CEO of Nissan and Renault, told reporters at the Detroit auto show. "This is totally normal with the amount of investment we are all doing. And we will be competing with the 200-mile car."

As Musk strives to create a viable company for the long term, his most formidable challenger could be Toyota. The Japanese company swears by hydrogen fuel cells—batterylike devices that produce power through an electrochemical reaction of hydrogen and air, with water vapor as the only byproduct. The company started marketing its Mirai fuel-cell car for $61,000 in Japan in December and hopes eventually to be selling hundreds of thousands a year, says Yoshimi Inaba, chairman of North American sales.

The Mirai travels 300 miles with a hydrogen tank that can be refilled in five minutes. With high-volume manufacturing, Toyota has cut the cost of handbuilt fuel-cell components by 95 percent since 2008, says Satoshi Ogiso, a Toyota executive who helped develop the hybrid Prius. During the next decade, he says, Toyota expects to cut today's production costs of the Mirai by two-thirds.

Toyota and Tesla once had a close relationship—and Khobi Brooklyn, a Tesla spokeswoman, says they still do. In 2010, Toyota sold Tesla its abandoned Fremont factory for $42 million. A new plant could have cost $1 billion, says Ron Harbour, a partner at New York consulting company Oliver Wyman Group. Toyota then bought electric motors from Tesla for two years.

Today, in Toyota's view, the companies are drifting apart. "Our relationship with Tesla is not going upward; it's going stagnant at best," Inaba says. Toyota didn't learn much from Musk's technology and doesn't expect Tesla to ever sell 500,000 electric cars a year, he adds.

Musk says most commercial hydrogen to run fuel cells is made from natural gas in a process that consumes energy and emits carbon. Hydrogen is also dangerous to store and transport, he says. "Fuel cells should be renamed 'fool cells,'" Musk said in a 2013 Bloomberg News interview.

"I think this is not classy," Inaba says of the remark.

Of course, much of the electricity for recharging Teslas comes from coal. Yet Musk says electric motors are so much more efficient than those that run on gasoline that they are cleaner even if all the electricity comes from hydrocarbons.

Whatever the merits of fuel cells, all automakers are rushing to electrify. By 2023, battery-powered-car deliveries, including gas-electric hybrids, could triple to 6.1 million worldwide, says Sam Jaffe, a Navigant Consulting analyst in Boulder, Colorado. A big motivator is California's air pollution control regulations, which require the six biggest automakers to derive 4 percent of sales from zero-emission cars this year. Nine other states, including New York and Oregon, have similar laws. By the 2018 model year, the ZEV requirement in all those states will jump to 15.4 percent and include smaller companies such as BMW.

The new rules are a great boon to Tesla. Electric-car buyers receive $7,500 in federal tax credits and, if they live in California, $2,500 from that state, where Tesla sold 6,110 Model S's last year.

Tesla could eventually earn $500 million a year by selling pollution credits, a quarter of its capital costs.

In addition, the 10 ZEV states distribute credits that companies can buy and sell to meet emissions targets. Companies that fall short of the targets can buy credits from companies that don't to avoid fines. At 2015 prices, these credits earn Tesla $14,000 for every Model S sold in the 10 states, people familiar with the situation say. (Details of the transactions aren't public.) Tesla can earn another $17,500 in credits every time a Model S swaps its battery pack for a fully charged new one at an experimental station north

COURTESY OF TESLA

ROCKETING TO PROFITS

BRUCE WEAVER/AFP/GETTY IMAGES

INVESTORS ARE WONDERING HOW MANY years it will take before Tesla makes a profit. For Elon Musk's other big enterprise, SpaceX, the time is now.

Space Exploration Technologies, as the closely held company is formally known, has contracts worth $4.2 billion for hauling U.S. astronauts and supplies to the International Space Station, and Pentagon officials say they expect to certify it soon for military payloads. And SpaceX's business of launching satellites looks so promising that, in January, Google and Fidelity Investments together invested $1 billion in the Hawthorne, California–based company. That gives them a 10 percent stake that values SpaceX at $10 billion. Other investors include the Founders Fund, Draper Fisher Jurvetson, Valor Equity Partners, and Capricorn. With 50 launches worth $5 billion on its manifest, SpaceX is making money, according to its website, although a spokesman wouldn't say how much.

On Jan. 10, a SpaceX Falcon 9 rocket took off from Cape Canaveral, above, and successfully delivered 5,200 pounds of supplies to the space station. SpaceX's schedule includes 16 satellite launches in 2015, the most in the company's 13-year history. "Google brings the applications for the satellites to the table, and SpaceX has the technical know-how and the launch capacity," says Marco Caceres, director of space studies at consulting firm Teal Group in Fairfax, Virginia.

Google has a practical goal in linking up with SpaceX. It wants to beam the Internet to hard-to-reach regions of the planet so it can take in more advertising revenue. "Space-based applications, like imaging satellites, can help people more easily access important information, so we're excited to support SpaceX's growth," Google spokesman Aaron Stein said in a statement.

Musk's aim is more ethereal: He wants to colonize Mars.

SpaceX, which employs 4,000 people, is offering cheaper rocket and satellite launches than were possible when NASA and the military were in charge. Musk says he can send a satellite into space for $60 million. His main private competitor, United Launch Alliance, a joint venture of Lockheed Martin and Boeing, spends $225 million, ULA's website says.

Musk's money-saving strategy is to produce reusable rockets, which will return to Earth and land on a seagoing barge. SpaceX called off its second attempt at a barge landing, on Feb. 11, because of heavy seas. The company was due to try again in April. "Aircraft do tens of thousands of flights," Musk told Bloomberg News in January. If SpaceX rockets can be reused, he said, the cost comes down to "$200,000 to $300,000 per flight in fuel and oxygen versus a $60 million rocket."

And the Mars colony? Gwynne Shotwell, SpaceX's chief operating officer, says the first step, manned flights to the planet, could begin in 15 years.

JOHN LIPPERT

of Los Angeles. Each car is allowed 25 swaps, with total credit-eligible visits capped at the number of cars Tesla sells each year in the state.

Dan Sperling, an environmental engineering professor at the University of California at Davis and a member of the state's Air Resources Board, defends the ZEV program as a way to promote technologies California needs to cut carbon emissions. Still, he expects the Air Resources Board to reduce credits for battery swaps. "We want to be generous in supporting these technologies, not obscene," he says.

If nothing changes, Tesla could make enough money selling credits—as much as $500 million a year—to fund a quarter of its capital expenses, says Morgan Stanley's Jonas.

When he was designing the Model S, Musk chose lithium-ion battery packs that in 2009 cost $1,200 per kilowatt hour, Jaffe says. The Gigafactory, by consolidating an extensive global

Tesla purchased its Fremont factory from Toyota for $42 million in 2010.

supply chain, could help reduce the cost to as little as $250 by 2020—low enough to make batteries competitive with gasoline engines, Jaffe says.

To build a $35,000 car, Tesla will need more than cheaper batteries. Tesla executives say it will have to make optional some of the equipment that's now standard on the Model S and buy more generic components, such as shock absorbers, from high-volume suppliers. And the company will need higher productivity. The Fremont plant today boasts some cutting-edge technologies, such as a device that uses air under high pressure to twist hot aluminum sheets into complex shapes. But the production process also includes labor-intensive operations incompatible with mass production. For instance, just after body panels leave the stamping presses, workers use files and rasps to smooth out their surfaces. Other workers assemble bundles of wires that connect hundreds of components—a job usually outsourced to a cheap-labor foreign country. Tesla does such jobs in-house in part because it's making design improvements to the Model S "20 times a week," says Greg Reichow, Tesla's manufacturing vice president. He says Tesla is rapidly deploying more automation. Producing a new electric motor for the dual-motor Model S requires one-sixth of the manpower devoted to prior designs, he says.

Musk says he's determined to conquer the mass market because the world needs electric cars, even though, for the moment, hydraulic fracturing has lowered gasoline prices dramatically and made driving gas-powered cars cheaper. "Fracking probably increases the accessible oil and gas in the world by a factor of 10," Musk said in Detroit in January. "We're really going to regret the amount of carbon we're putting into the oceans and atmosphere."

Rolling through fire-scarred canyons above Los Angeles on a hazy afternoon, Chris Ziegler says he's confident Tesla will make the world a better place. Meanwhile, he's loading up. In addition to his Model S, he owns a $109,000 Roadster that Tesla discontinued in 2012, and he's one of 20,000 people on the waiting list for a gull-wing SUV. He never tires of driving his Model S. After showing off its speed and agility, he apologizes for resuming normal driving. "I'll get motion sickness," he says.

Praise from owners such as Ziegler, together with the long waiting list, underscores Musk's success as an auto designer and manufacturer. The question for investors is, will the entrepreneur ever be as proficient at making money as he is at making cars?

The dual-motor version of the Model S reaches 60 mph in 3.2 seconds, faster than a Corvette.

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BY CHARLES STEIN

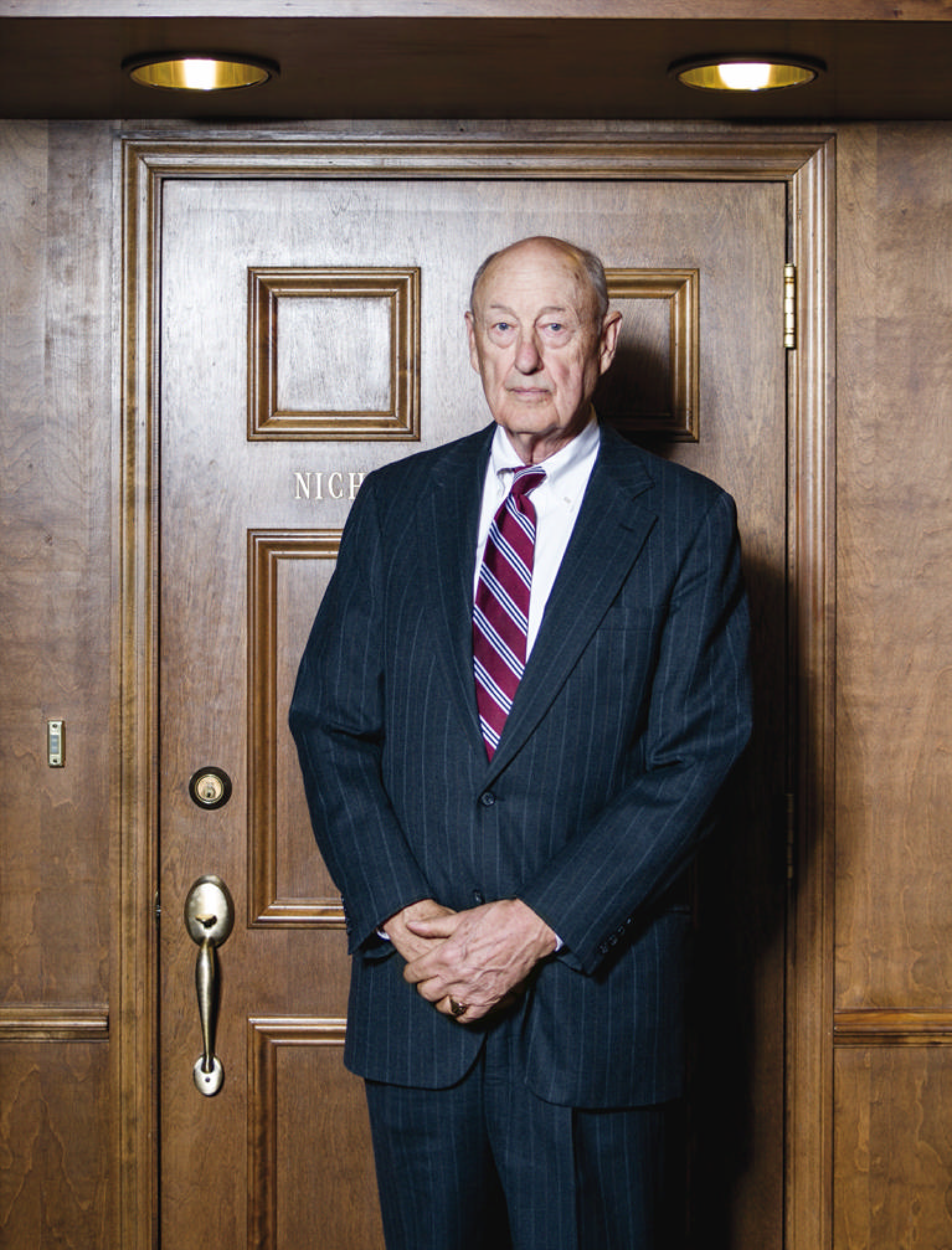
STAYING ACTIVE

FUND MANAGER ALBERT NICHOLAS HAS CONSISTENTLY BEATEN THE S&P 500 FOR 40 YEARS, DEFYING THOSE WHO SAY STOCK PICKERS CAN'T OUTRUN INDEXES—OR MACHINES.

Nicholas, right, gave up a chance to play professional basketball to instead play the stock market.

1

PHOTOGRAPH BY JENN ACKERMAN AND TIM GRUBER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Albert Nicholas is well aware that some prominent academics say stock pickers can't beat their benchmarks over the long haul. He doesn't have a Ph.D., yet he has good reason to disagree. The Nicholas Fund, which he has run since 1969, has topped the Standard & Poor's 500 Index by an average of 2 percentage points a year for the past 40 years and has beaten it every year since 2008. ▪ If you think that doesn't make a big difference, consider this: A $10,000 investment in the Nicholas Fund in September 1974 was worth about $2 million in September 2014, roughly twice the value of the same investment in the index. "Some guys who are smarter than I am say we can't outperform like this," says Nicholas, who turned 84 in January. "But we have done it, so I will leave it at that."

Nicholas has been especially hot since the end of 2009, riding longtime holdings such as auto parts retailer O'Reilly Automotive, up fivefold in the five years ended on Dec. 31, and money manager Affiliated Managers Group, which tripled in the same period. Nicholas has owned stakes in both companies for more than a decade.

DIVERSIFIED U.S. EQUITIES

	FUND, MANAGEMENT COMPANY, MANAGER(S)	SCORE*	TOTAL RETURN, AS OF DEC. 31 1-YR.	3-YR.	5-YR.
1	**Nicholas** NICHOLAS CO. Albert Nicholas/David Nicholas	87.6	15.3%	25.3%	19.9%
2	**SEI Institutional Investments Trust U.S. Managed Volatility** SEI INVESTMENTS MANAGEMENT Team managed	87.0	17.5	19.9	17.1
3	**Smead Value** SMEAD CAPITAL MANAGEMENT William Smead/Tony Scherrer/Cole Smead	85.9	14.4	26.2	18.8
4	**Vanguard PRIMECAP Core** PRIMECAP MANAGEMENT Theo Kolokotrones/Joel Fried/Alfred Mordecai	85.4	19.3	23.0	16.2
5	**Vanguard PRIMECAP** PRIMECAP MANAGEMENT Theo Kolokotrones/Joel Fried/Alfred Mordecai	85.2	18.7	24.1	16.2
6	**PRIMECAP Odyssey Aggressive Growth** PRIMECAP MANAGEMENT Team managed	85.0	16.6	29.7	21.5
7	**Glenmede Large Cap Growth Portfolio** GLENMEDE INVESTMENT MANAGEMENT Vladimir de Vassal/Paul Sullivan/Alexander Atanasiu	84.9	20.0	24.6	19.2
8	**SEI Institutional Managed Trust U.S. Managed Volatility** SEI INVESTMENTS MANAGEMENT Team managed	84.8	16.5	19.1	16.4
9	**JPMorgan Mid Cap Value** JP MORGAN INVESTMENT MANAGEMENT Jonathan Simon/Lawrence Playford/Gloria Fu	83.9	14.6	21.7	17.7
10	**Fidelity Mid Cap Value** FIDELITY MANAGEMENT & RESEARCH Court Dignan	83.5	16.7	24.5	18.3

Takes into consideration one-, three-, and five-year returns as well as three- and five-year Sharpe ratios. Ranking includes open-end retail diversified U.S. equities funds domiciled in the U.S. with total assets of more than $250 million as of Dec. 31. Three- and five-year returns are annualized. Source: Bloomberg

The numbers made the Nicholas Fund No. 1 in the diversified U.S. equities category in *Bloomberg Markets*' annual ranking of mutual funds.

The winners in the rankings all pick individual stocks and bonds. The rankings are based on U.S.-domiciled funds with more than $250 million under management as of Dec. 31. Funds are ranked by total returns for one, three, and five years and by their Sharpe ratios for three and five years. The Sharpe ratio measures the performance of funds adjusted for risk. Each of the five measures is given equal weight.

Active managers have been on the defensive of late. In 2014, just 21 percent of the funds that pick U.S. stocks beat their benchmarks, according to Morningstar. Investors have noticed and voted with their feet, swapping their actively

managed funds for low-cost index and exchange-traded funds. Last year, actively managed mutual funds that buy U.S. stocks suffered a net $98 billion in redemptions, while domestic stock index funds and ETFs attracted a net $167 billion. ETFs, nearly all of which mimic indexes, received $95 billion of the total.

The two biggest recipients of mutual fund cash last year were Vanguard Group, the index fund leader, and Dimensional Fund Advisors, an Austin, Texas, firm that sells index funds with a bias toward small-cap and value stocks. "Conventional active managers promised a lot they were not able to deliver," says David Booth, Dimensional's chairman. (They usually do, says former Vanguard CEO Jack Bogle. See "Is There a Next Jack Bogle? Not If You Ask Jack Bogle," page 54.)

SANTA FE, NEW MEXICO–BASED THORNBURG INVESTMENT TOPS BOTH THE GLOBAL BONDS AND GLOBAL EQUITIES LISTS. ITS WINNING STOCK FUND HAS BEATEN ITS BENCHMARK BY AN AVERAGE OF 6 PERCENTAGE POINTS A YEAR SINCE 2006.

Booth's mentor, University of Chicago finance professor Eugene Fama, who shared the Nobel prize in economics in 2013 for his work on efficient markets, is equally dismissive of stock pickers. In a 2009 paper he wrote with Kenneth French of Dartmouth College, Fama concluded that actively managed stock funds collectively return

Thornburg was No. 1 in two categories. Left to right: **Jason Brady** of Strategic Income; **Brian McMahon** and **W. Vinson Walden** of Global Opportunities

PHOTOGRAPH BY **JEN JUDGE**

about the same as the stock market as a whole, minus the fees they charge.

Notwithstanding the academic research, the great bulk of fund money is still actively managed. Some $13.1 trillion was invested in U.S. mutual funds at the end of 2014. Of the $8.3 trillion in stock funds, 38 percent was passively managed. Yet that's double the percentage at the end of 2004. Although the money in U.S. ETFs has grown rapidly, from less than $100 billion in 2000 to $2 trillion today, it's still a fraction of the total amount in mutual funds.

'CONVENTIONAL ACTIVE MANAGERS PROMISED A LOT THEY WERE NOT ABLE TO DELIVER,' SAYS DAVID BOOTH OF DIMENSIONAL FUND ADVISORS, WHO'S A DISCIPLE OF THE UNIVERSITY OF CHICAGO'S EUGENE FAMA.

SMALL-CAP U.S. EQUITIES

	FUND, MANAGEMENT COMPANY, MANAGER(S)	SCORE*	TOTAL RETURN, AS OF DEC. 31 1-YR.	3-YR.	5-YR.
1	Longleaf Partners Small-Cap SOUTHEASTERN ASSET MANAGEMENT O. Mason Hawkins/G. Staley Cates/Ross Glotzbach	90.7	12.5%	21.7%	17.6%
2	Janus Venture JANUS CAPITAL MANAGEMENT Jonathan Coleman/Maneesh Modi	87.6	10.2	22.3	18.8
3	T. Rowe Price New Horizons T. ROWE PRICE ASSOCIATES Henry Ellenbogen	87.5	6.1	22.5	21.4
4	Hodges Small Cap HODGES CAPITAL MANAGEMENT Craig Hodges/Eric Marshall/Gary Bradshaw	86.0	6.1	23.0	21.2
5	Fidelity Small Cap Discovery FIDELITY MANAGEMENT & RESEARCH Chuck Myers	84.2	7.0	22.4	19.5
–	Vanguard Strategic Small-Cap Equity PRIMECAP MANAGEMENT James Troyer/Michael Roach/James Stetler	84.2	10.1	22.3	18.6
7	Hennessy Cornerstone Growth HENNESSY ADVISORS Neil Hennessy/Brian Peery	84.1	13.8	26.3	14.9
8	Homestead Small-Company Stock RE ADVISERS Mark Ashton/Prabha Carpenter/Gregory Halter	83.5	8.0	20.8	18.9
9	RS Small Cap Growth RS INVESTMENT MANAGEMENT Team managed	82.9	9.4	23.2	18.5
10	Delaware Small Cap Core HARTFORD FUNDS MANAGEMENT Christopher Adams/Michael Morris/Donald Padilla	81.6	8.6	21.3	18.2

**Takes into consideration one-, three-, and five-year returns as well as three- and five-year Sharpe ratios. Ranking includes open-end retail small-cap equities funds domiciled in the U.S. with total assets of more than $250 million as of Dec. 31. Three- and five-year returns are annualized. Source: Bloomberg*

The increasing popularity of passive investing has forced stock pickers to speak up. The normally publicity-shy Capital Group, which runs the $1.1 trillion American Funds complex, all of whose funds are actively managed, published two research papers in the past two years. One quoted statistics indicating that most American Funds offerings beat their benchmarks over time, while the other asserted that actively managed funds with low expenses and high manager ownership usually outperform. The firm acted after it was hit by $250 billion of client redemptions from 2008 to 2013. "We believe in what we do, even if at times the world doesn't," says Timothy Armour, Capital's head of mutual funds.

No one at the $1.1 billion Thornburg Global Opportunities Fund, a unit of Santa Fe, New Mexico–based Thornburg Investment Management, thinks the indexes can't be beaten. Since it was created in July 2006, the global stock fund has crushed its benchmark, the MSCI All-Country World Index, by an average of 6 percentage points a year. It tops the *Bloomberg Markets* ranking of global equities funds.

Co-manager W. Vinson Walden attributes the success to good research and a willingness to be patient. In 2010, the fund bought Brazil Foods, a São Paulo poultry producer whose shares were depressed by concerns about rising commodities prices. Walden saw something else: a low-cost producer with the potential to expand in Brazil and other emerging markets. "We saw a nice tail wind that would last for years," he says.

When the stock slumped again in 2013 due to management turnover, Walden bought more. As an active manager, he says, he can pounce when a company's share price dips below its long-term value. Brazil Foods traded at more than 60 reais a share on Dec. 31, up from 20 to 25 reais when the fund first purchased the stock. "It's been a gift that keeps giving," Walden wrote in an e-mail.

Another luxury active managers enjoy: making a big bet on one stock. Longleaf Partners Small-Cap Fund started last year with 13 percent of its money in cement

maker Texas Industries. "We are not afraid to make an outsized bet where we like something," says Ross Glotzbach, one of the managers of the $4.4 billion fund. Texas Industries agreed to be bought by Martin Marietta Materials at a premium in January 2014, which helped the Longleaf fund earn the No. 1 ranking among small-cap U.S. equities funds.

The Longleaf small-cap fund, run by Tennessee-based Southeastern Asset Management, boasts roughly twice the return of its benchmark, the Russell 2000 Index, over the past 20 years. The fund's managers will hold cash when they can't find attractive stocks. Longleaf also buys beaten-down companies when it believes the long-term prognosis is bright. The fund added energy shares in the fourth quarter as oil prices collapsed. "We are contrarians, and we like to buy things for less than they're worth," Glotzbach says.

The stampede to index funds and ETFs is not as pronounced among bond managers as among stock pickers. Only about 19 percent of the money in bond mutual funds and ETFs is indexed, according to Morningstar.

Still, active bond managers have to demonstrate they are worth the higher fees they charge compared with indexers. Daniel Ivascyn has done that. The $40 billion Pimco Income Fund he has run since 2007 outperformed 99 percent of peers over the five years ended on Dec. 31, while returning an average of 11.6 percent a year. Its benchmark, the Barclays U.S. Aggregate Index, gained an average of 4.5 percent annually.

The numbers were good enough to earn Pimco Income the top ranking among U.S. corporate bond funds for the second year in a row. They also helped Ivascyn win a new job, group chief investment officer. He got the title after bond legend Bill Gross abruptly left Pimco in September.

Ivascyn and co-manager Alfred Murata divide their fund into two buckets: one with high-yielding assets that will do well in a strong economy, and the other with investments that can thrive if the economy weakens. A longtime Ivascyn favorite filled the first pail last year: bonds made up of mortgages that aren't backed by Fannie Mae, Freddie Mac, or Ginnie Mae. Those bonds have rallied as the U.S. housing market has revived. "We still like them, and they have become safer and more predictable," Ivascyn says.

Ivascyn also bet on Australian government bonds, which rose as the Australian economy weakened because of a slump in commodities prices. Pimco Income's managers say their ability to regularly adjust the mix of assets—rather than blindly mimic an index—is critical to their performance, especially in an environment of ultralow interest rates.

Thornburg Investment was a double winner in the *Bloomberg Markets* ranking. Its $1.3 billion Strategic Income Fund topped the global bonds category, with average returns of 7.1 percent over three years and 7.8 percent over five. Co-manager Jason Brady says his ability to buy income-producing securities anywhere in the world is crucial to the fund's success. The fund topped its category despite a 3.2 percent return in 2014, due in part to the

U.S. CORPORATE BONDS

	FUND, MANAGEMENT COMPANY, MANAGER(S)	SCORE*	TOTAL RETURN, AS OF DEC. 31 1-YR.	3-YR.	5-YR.
1	Pimco Income PACIFIC INVESTMENT MANAGEMENT Daniel Ivascyn/Alfred Murata	44.7	7.0%	10.8%	11.6%
2	Delaware Extended Duration Bond DELAWARE MANAGEMENT David Hillmeyer/Michael Wildstein/Roger Early	41.8	15.9	9.0	11.4
3	Vanguard Long-Term Investment Grade WELLINGTON MANAGEMENT Lucius Hill/Scott St. John/Gregory Nassour	38.0	18.3	7.5	10.0
4	Waddell & Reed Advisors High Income WADDELL & REED INVESTMENT MANAGEMENT Chad Gunther	37.9	1.9	10.4	10.1
5	Fidelity Capital & Income FIDELITY MANAGEMENT & RESEARCH Mark Notkin	37.3	6.3	10.7	9.3
6	Fidelity Advisor High Income Advantage FIDELITY MANAGEMENT & RESEARCH Harley Lank	36.7	4.0	10.5	9.7
7	Ivy High Income IVY INVESTMENT MANAGEMENT Chad Gunther	36.5	1.5	9.3	9.8
8	Lord Abbett High Yield LORD ABBETT Steven Rocco/Robert Lee	35.9	3.7	9.8	9.3
–	Natixis Loomis Sayles Strategic Income LOOMIS SAYLES Daniel Fuss/Elaine Stokes/Matthew Eagan	35.9	5.7	10.0	9.3
10	USAA High Income USAA ASSET MANAGEMENT R. Matthew Freund/Julianne Bass	35.7	3.5	9.4	9.5

**Takes into consideration one-, three-, and five-year total returns as well as three- and five-year Sharpe ratios. Ranking includes open-end retail bond funds domiciled in the U.S. with total assets of more than $250 million as of Dec. 31. Three- and five-year returns are annualized. Source: Bloomberg*

fact that it missed out on much of the rally in government bonds. “The risk/reward didn’t look that good to us,” Brady says. “Too many of the buyers, like the Federal Reserve, don’t care if they make money.”

Brady has concentrated on corporate debt, including high yield. Because most of his bonds are denominated in dollars, the fund wasn’t hurt in 2014 as the dollar strengthened against most currencies. One of Brady’s holdings, Odebrecht Offshore Drilling Finance, a Brazilian supplier of ships that explore for oil, yields about 13 percent, a reflection of investor concern about plummeting oil prices. “There is a lot of risk, but we also have a lot of protection,” Brady says.

ALBERT NICHOLAS CHANGED HIS STYLE AFTER BIG LOSSES IN 1973 AND 1974. SINCE THEN, HE HAS INVESTED IN STEADY GROWERS WITH STRONG BALANCE SHEETS AND LIMITED EXPOSURE TO THE UPS AND DOWNS OF THE ECONOMY.

Albert Nicholas, known to friends as Ab, almost chose another field that offered the kind of competitive challenge he thrives on. A star basketball player at the University of Wisconsin, he was offered $6,000 a year in 1954 to play for the Milwaukee Hawks in the National Basketball Association. He took a financial job instead for $4,200. “I think I made the right decision,” he says.

Nicholas opened his own Milwaukee-based investment firm in 1967 and two years later started the Nicholas Fund. His 45 years running one fund make him the third-longest-serving mutual fund manager in the U.S., after Ernest Monrad, 84, of Northeast Investors Trust, and Rupert Johnson Jr., 74, of the Franklin DynaTech Fund.

Nicholas’s firm runs six mutual funds and a total of $5 billion in assets. His son David, 53, is co-manager of the Nicholas Fund and lead manager of the $715 million Nicholas II fund, which buys midcap stocks, and the $323 million Nicholas Limited Edition fund, which invests in small caps.

After a strong start in the 1960s, the Nicholas Fund lost 53 percent in the recession of 1973 and 33 percent in 1974. Nicholas changed his strategy. He abandoned the chase for hot stocks and looked for companies he could hang on to—steady growers with strong balance sheets and limited exposure to the ups and downs of the economy. The idea was to make money by avoiding steep plunges. “We have two principles,” he says, adapting an old joke. “The first is: Don’t lose money. The second is: Don’t forget principle No. 1.”

Nicholas’s focus on avoiding losses helped him in 2008, when he beat 93 percent of peers, and in 2011, when he beat 96 percent as the S&P 500 gained 2.1 percent. He largely avoids banks, cyclical businesses, and commodities producers, including energy companies. “I don’t know anyone last year who said oil was going

GLOBAL BONDS

TOTAL RETURN, AS OF DEC. 31

	FUND, MANAGEMENT COMPANY, MANAGER(S)	SCORE*	1-YR.	3-YR.	5-YR.
1	Thornburg Strategic Income THORNBURG INVESTMENT MANAGEMENT Jason Brady/Lon Erickson/Jeff Klingelhofer	44.1	3.2%	7.1%	7.8%
2	Aberdeen Global High Income ABERDEEN ASSET MANAGEMENT Greg Hopper	41.3	0.3	8.1	7.2
3	Consulting Group Capital Markets International Fixed Income Investments CONSULTING GROUP ADVISORY SERVICES Michael Gomez/Sachin Gupta/Kendall Miller	40.5	9.1	4.8	5.6
4	Goldman Sachs Emerging Markets Debt GOLDMAN SACHS ASSET MANAGEMENT Samuel Finkelstein	40.4	6.1	5.6	7.3
5	Fidelity New Markets Income FIDELITY MANAGEMENT & RESEARCH John Carlson	39.5	5.0	5.6	7.1
6	SEI Institutional International Trust International Fixed Income SEI INVESTMENTS MANAGEMENT Team managed	38.8	7.9	4.8	4.6
7	Templeton Global Total Return FRANKLIN ADVISERS Sonal Desai/Michael Hasenstab	38.7	0.4	7.3	7.1
8	MFS Emerging Markets Debt MASSACHUSETTS FINANCIAL SERVICES Matthew Ryan/Ward Brown	37.7	4.8	5.2	6.5
9	Fidelity Advisor Emerging Markets Income FIDELITY MANAGEMENT & RESEARCH John Carlson	36.6	4.0	5.0	6.6
–	Goldman Sachs Global Income GOLDMAN SACHS ASSET MANAGEMENT Andrew Wilson/Iain Lindsay	36.6	6.2	4.5	4.4

**Takes into consideration one-, three-, and five-year returns as well as three- and five-year Sharpe ratios. Ranking includes open-end retail global bond funds domiciled in the U.S. with total assets of more than $250 million as of Dec. 31. Three- and five-year returns are annualized. Source: Bloomberg*

to fall 50 percent," he says. "So much for predicting."

O'Reilly Automotive is a longtime Nicholas favorite. The Springfield, Missouri–based retailer grows steadily in good economic times and bad. "When the economy struggles, people keep their cars longer," he says. Nicholas first put the stock in his fund in the third quarter of 2002, when it sold for an average of just over $14 a share. On Feb. 17, the price was $206. He is hanging on to the stock, though it looks expensive on paper. "We are patient with great companies, even if they are a little overvalued," he says.

AMG has also been in the portfolio since 2002 and had appreciated roughly fivefold since then as of Dec. 31. The Beverly, Massachusetts, firm buys up small money managers and gives their executives an incentive to continue to perform well. AMG owns a stake in Yacktman Asset Management, whose AMG Yacktman Fund boasts an average return of 13.9 percent over the five years ended on Feb. 17.

Nicholas has known bad times. His experience with losing money in the 1970s, and again in 2001 and 2002, when he bought plunging tech stocks too soon, has shown him it doesn't take much to fall behind. Yet he is not about to sit down with a textbook by Eugene Fama. "We think if we stick to our philosophy and protect people on the downside, we can produce a pretty good record," he says. "The past 40 years has proved that."

Charles Stein covers funds at Bloomberg News in Boston. cstein4@bloomberg.net With assistance from **Laurie Meisler** in New York.

GLOBAL EQUITIES

	FUND, MANAGEMENT COMPANY, MANAGER(S)	SCORE*	TOTAL RETURN, AS OF DEC. 31 1-YR.	3-YR.	5-YR.
1	Thornburg Global Opportunities THORNBURG INVESTMENT MANAGEMENT Brian McMahon/W. Vinson Walden	90.6	18.4%	22.6%	14.4%
2	SEI Global Managed Volatility SEI INVESTMENTS MANAGEMENT Team managed	85.7	13.6	14.8	11.1
3	Dreyfus Growth and Income DREYFUS John Bailer/Elizabeth Slover	85.6	10.0	20.9	15.2
4	American Funds – New Economy CAPITAL RESEARCH & MANAGEMENT Timothy Armour/Mark Denning/Claudia Huntington	83.7	4.6	22.9	14.7
5	Highland Global Allocation HIGHLAND CAPITAL MANAGEMENT FUND ADVISORS James Dondero	83.5	15.3	19.1	13.1
6	Columbia Value and Restructuring COLUMBIA MANAGEMENT INVESTMENT ADVISERS Guy Pope/J. Nicholas Smith	81.7	12.9	20.4	13.3
7	American Funds – Fundamental Investors CAPITAL RESEARCH & MANAGEMENT Mark Casey/Brady Enright/Gregory Johnson	80.7	9.0	18.8	13.4
8	American Century Growth AMERICAN CENTURY INVESTMENT MANAGEMENT Gregory Woodhams/Prescott LeGard	79.3	11.2	17.9	13.8
9	Artisan Global Value ARTISAN PARTNERS Daniel O'Keefe/David Samra	78.6	4.5	17.7	14.0
10	Amana Growth SATURNA CAPITAL Nicholas Kaiser/Scott Klimo	76.9	14.0	15.9	12.1

**Takes into consideration one-, three-, and five-year returns as well as three- and five-year Sharpe ratios. Ranking includes open-end retail global equities funds domiciled in the U.S. with total assets of more than $250 million as of Dec. 31. Three- and five-year returns are annualized. Source: Bloomberg*

HOW WE CRUNCHED THE NUMBERS

We used two Bloomberg functions to create the mutual fund rankings. The first was Fund Screening (FSRC), which we used to generate separate lists for global, diversified U.S., and small-cap U.S. equities funds and for U.S. corporate and global bond funds. The second was Fund Scoring (FSCO), which we used to create a model with five criteria: total returns, net of fees, for one, three, and five years and Sharpe ratios for three and five years, all as of Dec. 31.

All searches included only active, open-end, U.S.-domiciled, Class A funds with more than $250 million in total assets as of Dec. 31. We excluded institutional-class, index, sector, and market-neutral funds. For global equities and global bond funds, we limited the universe to funds described as global in the Bloomberg database.

In scoring the funds, we blended returns with the Sharpe ratio because that measure shows how well the return of a fund compensates investors for the risk taken. A fund that takes substantial risk to produce a high return may have a lower Sharpe ratio than a fund that takes less risk and gets a lower return. Our screen model gave equal weight to the five criteria, with each fund in the same group awarded a score from zero to 100 based on its performance in the group. The winning funds were those that received the highest scores.

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RANKINGS@BLOOMBERG.NET

THE FASTEST-GROWING

ETFs

	FUND, MANAGEMENT COMPANY, MANAGER(S)	SCORE*	ASSETS AS OF DEC. 31, 2011, IN MILLIONS	ASSETS AS OF DEC. 31, 2014, IN MILLIONS
1	Vanguard S&P 500 VANGUARD GROUP Michael Buek	84.4	$2,366	$27,630
2	Vanguard Health Care VANGUARD GROUP Ryan Ludt	81.5	729	4,233
3	Schwab U.S. Large-Cap CHARLES SCHWAB INVESTMENT MANAGEMENT Agnes Hong/Ferian Juwono/Chuck Craig	79.4	704	3,820
4	Schwab U.S. Broad Market CHARLES SCHWAB INVESTMENT MANAGEMENT Agnes Hong/Ferian Juwono/Chuck Craig	77.7	815	4,543
5	iShares U.S. Utilities BLACKROCK FUND ADVISORS Greg Savage/Jennifer Hsui/Diane Hsiung	76.9	772	1,930
6	iShares Nasdaq Biotechnology BLACKROCK FUND ADVISORS Greg Savage/Jennifer Hsui/Diane Hsiung	76.8	1,394	6,939
7	Guggenheim S&P 500 Equal Weight SECURITY INVESTORS Michael Byrum/James King/Ryan Harder	75.1	2,640	10,132
8	iShares Core High Dividend BLACKROCK FUND ADVISORS Greg Savage/Jennifer Hsui/Diane Hsiung	75.0	918	5,201
9	PowerShares FTSE RAFI U.S. 1000 INVESCO POWERSHARES CAPITAL MANAGEMENT Peter Hubbard/Jonathan Nixon/Brian Picken	74.4	1,165	4,359
10	iShares U.S. Technology BLACKROCK FUND ADVISORS Greg Savage/Jennifer Hsui/Diane Hsiung	74.3	1,300	4,720

**Takes into consideration one-, two-, and three-year asset growth as of Dec. 31. One-year growth was weighted 50 percent; two- and three-year growth were weighted 30 percent and 20 percent, respectively. Includes unleveraged retail funds domiciled in the U.S. with total assets of more than $500 million as of Dec. 31, 2011. Source: Bloomberg*

THE BUSINESS OF exchange-traded funds is dominated by three big players: BlackRock's iShares, Vanguard Group, and State Street, which collectively control 82 percent of the roughly $2 trillion invested in ETFs. Other firms are fighting to gain market share, and several have made their way into *Bloomberg Markets*' annual ranking of the fastest-growing funds over the three years ended on Dec. 31. Charles Schwab Investment Management has two of the funds on this year's list: Schwab U.S. Large-Cap and Schwab U.S. Broad Market.

"Those ETFs are boring as dirt," says Dave Nadig, chief investment officer at research firm ETF.com, pointing out that the Schwab ETFs track common market indexes. They're also very cheap, which is their main appeal, he says. Schwab charges 4 cents for every $100 invested, a penny less than Vanguard charges for similar products. Schwab customers can buy and sell ETFs for no commission. The low-cost approach helped the firm amass $27 billion in ETF assets as of Dec. 31.

The Guggenheim S&P 500 Equal Weight ETF—a so-called smart-beta fund—almost quadrupled its assets in the three years. As the name implies, the ETF tracks a version of the popular benchmark in which all 500 companies are weighted equally, rather than being measured according to their market capitalization. Since the end of 2008, the equal-weighted product has outperformed its traditional counterpart, thanks to the strong showing of smaller-cap stocks, whose influence is greater in the equal-weighted index. In the six years ended on Dec. 31, the Guggenheim offering returned 21 percent a year compared with 17 percent for the SPDR S&P 500 ETF Trust, the biggest ETF by assets. (For more on smart-beta ETFs, see "Attack of the Algorithms!" on page 64.)

"Investors chase performance," says Alex Bryan, an analyst at Morningstar who follows passive products. Bryan has a warning for investors in the Guggenheim ETF: Because small- and midcap stocks are now relatively expensive, "I would not expect that kind of outperformance to persist."

Invesco PowerShares, the fourth-largest U.S. ETF provider, had one of the 10-fastest-growing ETFs, the PowerShares FTSE RAFI U.S. 1000 ETF. Also a smart-beta product, the ETF weights its holdings according to book value, cash flow, sales, and dividends rather than market cap.

Only two of the 10 fastest-growing ETFs are repeaters from last year's list: Schwab U.S. Broad Market and Vanguard Health Care. Health care was the best-performing sector in the S&P 500 over the past three years. **CHARLES STEIN**

SPECIAL REPORT | MUTUAL FUNDS AND ETFs

IS THERE A NEXT JACK BOGLE?

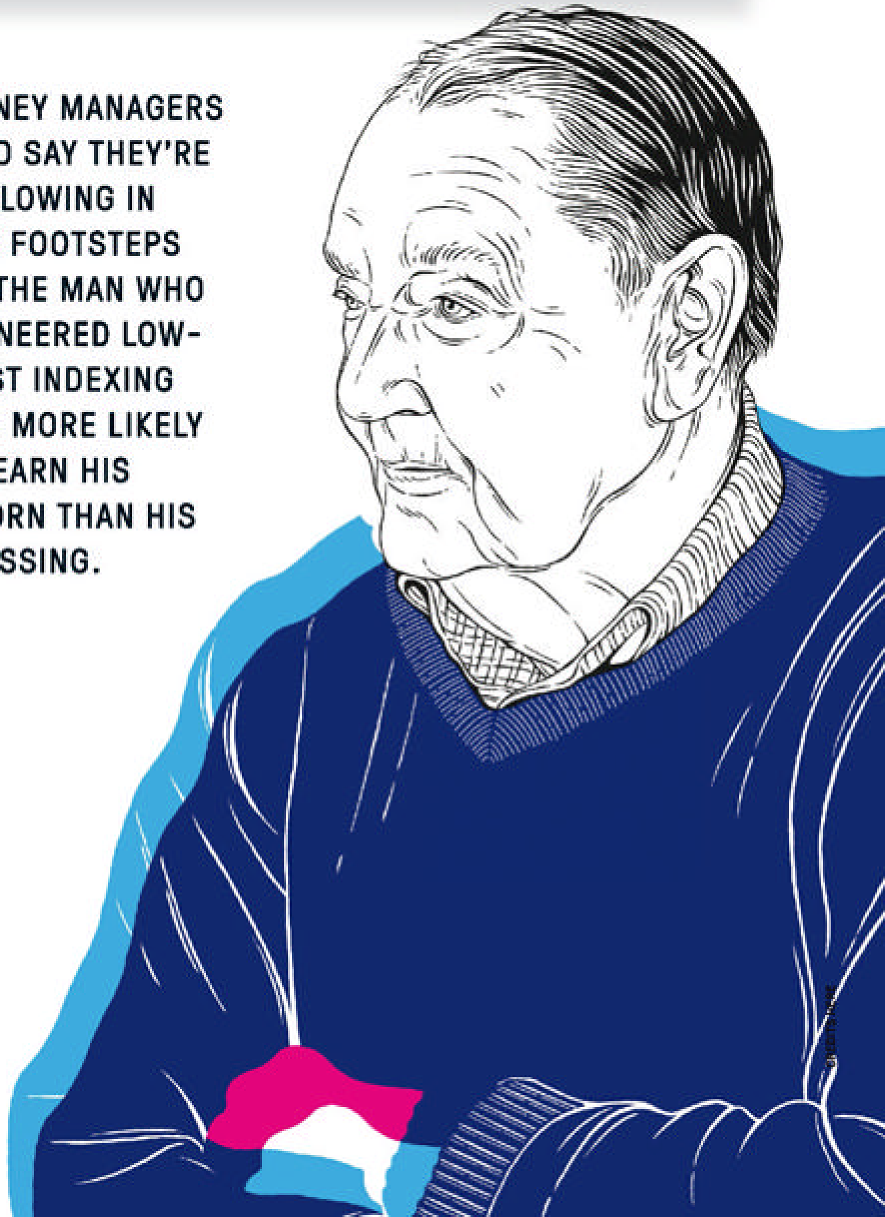
2

BY MICHAEL P. REGAN AND ROBERT S. DIETERICH

ILLUSTRATIONS BY STUART PATIENCE

NOT IF YOU ASK JACK BOGLE

MONEY MANAGERS WHO SAY THEY'RE FOLLOWING IN THE FOOTSTEPS OF THE MAN WHO PIONEERED LOW-COST INDEXING ARE MORE LIKELY TO EARN HIS SCORN THAN HIS BLESSING.



FREEZING RAIN IS falling on the sidewalks at Vanguard Group's sprawling suburban campus outside Philadelphia, but it doesn't slow down company founder John C. "Jack" Bogle as he hustles from his office to the cafeteria for lunch. "This is a walking stick, not a cane," he jokes, and he waves it in the air for a moment. "Anyone who calls it a cane will get three good whacks."

They're not the only ones likely to get a good thrashing from Bogle. Even with the ailments that come from being 85 years old and having had a heart transplant 19 years ago, Bogle arrives at work every day itching for a fight with anyone who questions the wisdom of the low-cost index funds he has advocated for four decades. His message—he will repeat it as often as necessary—is that trying to beat the market is a fool's game and that fees collected by fund managers who say they know how are a waste of money.

He compares himself to the mythical "man in the arena" evoked by former President Theodore Roosevelt in a famous speech in 1910: the doer of deeds who exhausts himself in a worthy cause and "whose face is marred by dust and sweat and blood." Which raises a question. Is there no one to enter the arena and take Bogle's place?

A slew of money managers and academics—Robert Arnott of Research Affiliates, for example, and Andrew Lo at AlphaSimplex Group—say they're building on what Bogle created. As they offer new categories of passive investment products, Bogle mostly grumbles. Likewise, as established money management giants such as BlackRock cut fees on some funds and expand their index offerings, he remains skeptical that they embrace his worldview. On this icy January day, holding court in a cluttered office more reminiscent of a state university than a Wall Street firm, Bogle says he's still a one-man crusade. "I don't want to sound too egotistical, but I think it's crystal clear that nobody, *nobody*, plunges into this battle to build a better industry with any more enthusiasm than I do," he says. "Certainly nobody within the industry. Everybody thinks: 'Kind of, fat, dumb, and happy. Let's enjoy what we've got.' Because they're making a lot of money."

Making money for themselves, he

means, not for the investing public. Performance by active managers is dismal, especially of late, and investors are fleeing to passively managed index funds, so Bogle is enjoying something of a told-you-so decade. Only 25 percent of actively managed equity mutual funds beat their benchmarks last year, the lowest rate since 1995, according to data from Morningstar. For U.S. stock funds, the beat rate was only 21 percent, the worst on record. Investors have pulled money from actively managed U.S. equity funds for nine straight years. They withdrew $98 billion last year while putting $167 billion into passively managed U.S. stock mutual funds and ETFs.

The trend toward passive management is unlikely to reverse, Bogle argues. Investment firms that make their money off actively managed funds will milk the cash cow, but their business will wither, he says. Their thinking might go something like this: "'We'll shrink, but we'll take a lot of money out of it on the way down, year after year.' That's what a cash cow is," Bogle says. "In 25 or 30 years, they'll be gone. That seems like an extreme statement, but I think it's not without possibility."

As much as that idea pleases him, other recent trends don't. The proliferation of ETFs—there were 6,618 worldwide as of mid-February, up from several hundred a decade earlier—alarms Bogle. With so many options, choosing the right ETF becomes almost as prone to error as picking individual stocks, he says. Bogle rejected the first ETF when it was just an idea being shopped around in the early 1990s by Nathan Most of the American Stock Exchange. Vanguard started offering ETFs only in 2001, after Bogle had given up the CEO and chairman posts. Bogle will concede that ETFs haven't ruined the place. But simplicity is his watchword, so he'll never make his peace with an industry that offers investors an ever-expanding collection of ETFs linked to solar power companies or Brazilian stocks or gold or some kind of algorithm. "We've had too much innovation in this business, far too much," Bogle says. "How many innovations have helped investors?"

As the conversation turns to ETFs, Bogle gets up from the couch and starts searching for something, checking the stacks of books and papers piled on his desk, shelves, and floor. "Sorry, but this office always looks like this." After a minute, he gives up the search, sits back down, and explains that he was looking for an old *Wall Street Journal* page with listings for hundreds of ETFs. He delivers his punchline without the prop: "Just throw a dart."

When something displeases Jack Bogle, he'll say so in the most forceful way. He describes himself as an independent thinker, very contrarian, very stubborn, who is looking out for the little guy. (He still answers every Vanguard fund investor who writes to him; handwritten notes get handwritten replies.) The investment management industry needs "more management and less marketing," he says. It needs "more stewardship and less salesmanship." Such complaints would be easier to dismiss if Bogle were an outsider, but he's not. He started Vanguard four decades ago, and today it oversees more than $3 trillion in 280 funds and is the second-largest money manager in the world, after BlackRock.

"I don't think we'll see his like again," says Cliff Asness, co-founder of AQR Capital Management. Asness tries to follow in Bogle's footsteps by daring to champion contrarian views, even when they might offend some of his financial industry peers.

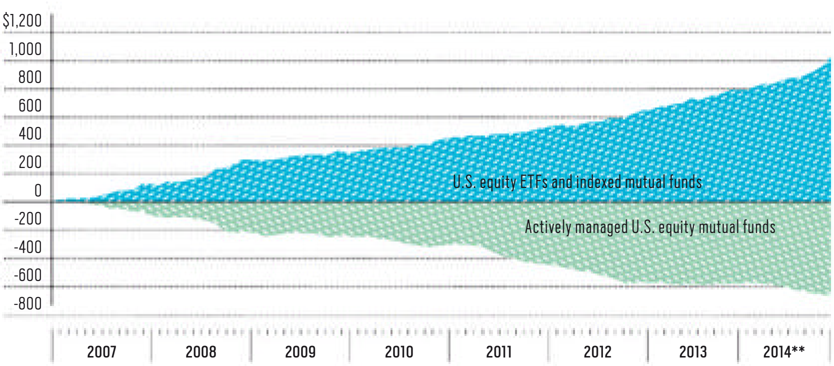
Asness is one of the seven people we look at in more detail in the following pages, assessing their ability to take on Bogle's role. The rare combination of outsider critic and insider business legend is what makes Bogle such a tough act to follow. Many people in the investment industry call Bogle their friend—justifiably, as Bogle mostly directs his criticisms at ideas and has kind words for individuals. And many want to extend what he's done, but they're unlikely to get his endorsement for their innovations.

THE MONEY MANAGEMENT INDUSTRY OFTEN FAILS THE SMALL INVESTOR, BOGLE SAYS, AND IT RESISTS CHANGE. "EVERYBODY THINKS: 'LET'S ENJOY WHAT WE'VE GOT.' BECAUSE THEY'RE MAKING A LOT OF MONEY."

ACTIVELY PASSIVE

For almost a decade, investors in U.S. equities have steadily pulled money from actively managed funds and put it into ETFs and index funds.

Cumulative flows* (in billions)



**Includes net new cash, reinvested dividends, and net ETF share issuance. **Preliminary. Source: Investment Company Institute*

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F. WILLIAM McNABB

CEO
VANGUARD GROUP

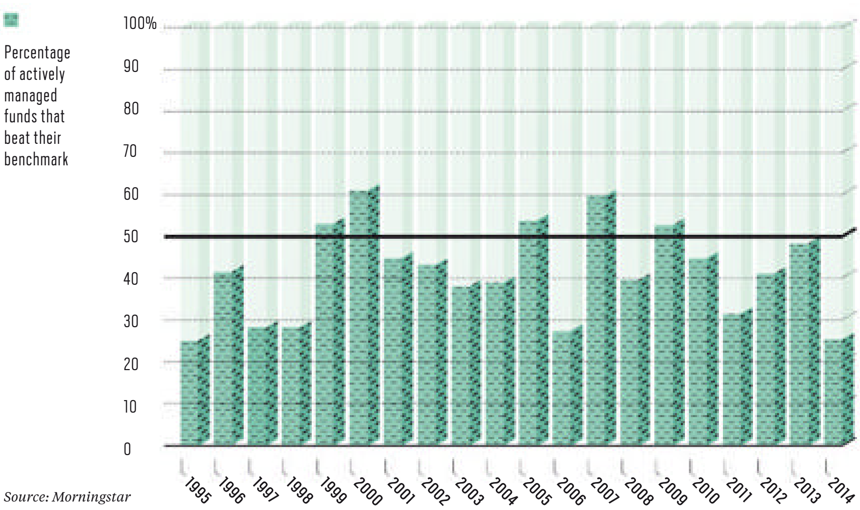
ANY EXAMINATION OF Bogle's heirs has to start with the person running the firm Jack built. That guy today is Bill McNabb, a 29-year Vanguard veteran. McNabb has overseen spectacular growth, building assets to $3.1 trillion at the end of 2014 from $1.25 trillion when he became CEO in 2008 (two weeks before Lehman Brothers collapsed) and $180 billion when Bogle gave up the CEO job in 1996. That means Vanguard runs about as much money as all of the world's hedge fund managers—at a cost nowhere near 2 percent of assets, let alone 20 percent of profits.

Vanguard charges fund owners on average less than 0.15 percent of assets a year, $15 per $10,000. McNabb, 57, is as proud of that as Bogle is, but he expresses it with a buttoned-down calm rather than the bombast of the founder. The rest of the money management business operates with annual costs in the range of 0.65 percent or 0.70 percent of assets, McNabb says. "In every other industry that you can name, when it becomes pretty successful and margins are pretty rich, those margins get competed away," he says. "That had not happened in investment management." It's beginning to occur, he says, in no small part because Vanguard is forcing others to respond. "Prices are coming down. We're seeing people at least take steps to compete with us in certain segments of the marketplace."

McNabb, chairman of the Investment Company Institute, the industry's research and lobbying group in Washington, is comfortable with an insider role that Bogle long ago rejected. (Bogle grouses that ICI represents investment companies but should be working on behalf of fund investors.) When asked about Bogle's more strident views, McNabb chuckles and says only this: "Reasonable people can disagree on things." And this: "Our job here at Vanguard is to continue to consistently improve what we do for that end client and, in a sense, walk the walk." It's Bogle's role to talk the talk.

WOEFUL

Even being average is a tall order for stock pickers. In just five of the past 20 years did more than half of all actively managed equity funds beat their indexes after fees.



Source: Morningstar

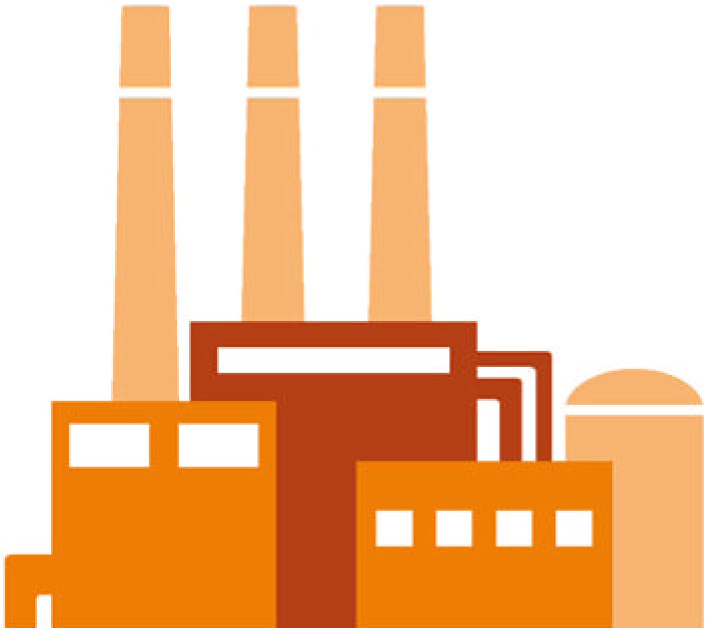
MARK WIEDMAN

GLOBAL HEAD
BLACKROCK ISHARES

IF YOU ACTUALLY threw a dart at a list of ETFs, there's a decent chance it would hit something from iShares, run by Mark Wiedman. A fast-growing unit of money management giant BlackRock, iShares captured almost a third of the $331 billion that flowed into global ETFs in 2014. With more than $1 trillion invested in some 700 different iShares ETFs, the BlackRock unit has a hefty lead in this category over second-place Vanguard and third-place State Street Global Advisors.

So is Wiedman, 44, following the Bogle path? Yes and no. He doubled the number of low-fee iShares Core funds last year, and BlackRock pitches ETFs to pension funds and other large institutional clients as a simpler, cheaper way to invest in the asset categories they want. In June, iShares cut fees on six existing funds. Singing the praises of index investing and cutting fees may be a page out of the Bogle songbook, but Wiedman isn't always in the same key.

As much as BlackRock embraces low-cost index products, the firm also actively manages billions of dollars for its clients. Wiedman, formerly head of corporate strategy for the entire company, says the active versus passive debate kind of misses the point. Every investment portfolio has to start with an active decision about where to invest, he says. "Low cost begs the question: low-cost what? If you think about the most important decision in any portfolio, it's asset allocation." He goes further: "When we talk about active versus indexing, we are obscuring the basic point that God did not hand out benchmarks on the tablets of Sinai. God didn't give us indexes. Those are creatures of man's mind." If the best type of index isn't set in stone, it follows that there are always more index products to be dreamed up (and drive Bogle crazy).



ROBERT ARNOTT

FOUNDER AND CEO
RESEARCH AFFILIATES

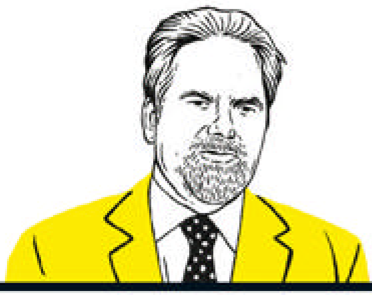
'SMART BETA CAN BE THE PRIME ALTERNATIVE TO ACTIVE MANAGEMENT FOR OUR TIMES, JUST AS CAP-WEIGHTED INDEX FUNDS SERVED IN THAT ROLE FOR THE PAST FOUR DECADES,' SAYS RESEARCH AFFILIATES.

ROB ARNOTT HAS spent more than a decade trying to free ETFs from what he sees as the tyranny of indexes weighted by market value. "We've stepped away from saying the market is the center of our universe to saying the economy is the center of our universe," explains Arnott, 60, who founded Research Affiliates in 2002 as he was honing his ideas. His firm offers fundamental indexing, which also goes by the newer, flashier name *smart beta*. (See "Attack of the Algorithms!" on page 64.) The idea is to weight companies based on measures such as sales, dividends, buybacks, and cash flows.

Research Affiliates pitches this as the future of what Bogle and Vanguard started. A white paper on the firm's website explains: "Smart-beta strategies can be the prime alternative to active management for our times, just as cap-weighted index funds served so admirably in that role for the past four decades." The discussion that follows is respectful of Bogle's legacy but also stakes a claim on where it leads.

Bogle, however, says such ideas lead nowhere and dismisses smart beta as "baloney." He objects that Arnott and others who tout ETFs indexed to fundamentals instead of market cap are offering something different but not better—adding complexity for no good reason. "Sometimes it'll do a little better, and sometimes it'll do a little worse. And in the long run, it should do about the same," Bogle says.

Arnott is familiar with the reaction, and unperturbed. He says market-cap weighting implies that investors have faith that the market is pricing company shares correctly—efficiently, in the language of academics. In reality, he goes on, investors are vulnerable to bubbles and what he calls "anti-bubbles," such as the depressed valuations of bank stocks in the wake of the financial crisis. "Those who anchor on cap weighting and who hew to the notion that prices are fair and that the market is efficient simply won't acknowledge that severing the link with price has any value," Arnott says. "That's the Achilles' heel of the classic indexing community."



JOHN BOGLE JR.

FOUNDER
BOGLE INVESTMENT MANAGEMENT

JACK BOGLE MAY have only himself to blame for raising a son who turned out to be a stock picker. He got John Bogle Jr. interested in the market as a teenager, helping him select a handful of shares. "I probably should've gotten him to buy an index fund, but that wouldn't be very interesting for a young man," the elder Bogle told Bloomberg Radio last year.

The father believes enough in his active manager son to invest some of his own money in the Bogle Investment Management Small Cap Growth Fund, a mutual fund that posted a 20 percent average annual return after fees during the past three years, beating 96 percent of its peers. The $205 million fund uses quantitative models to pick small-cap stocks based on such things as earnings trends and earnings surprises, relative valuation, and financial strength. The firm uses similar methods for a hedge fund that includes both long and short bets, chosen by sifting through about 6,000 stocks worldwide.

Bogle Jr., 54, has a sense of humor about the tension that comes from being an active fund manager and the son of the most famous advocate of passive investing. At an event honoring his father in 2012, he joked about some of the rules his dad taught him. "Always wear a wool tie in preference to silk, lest you be thought of as being flamboyant or be mistaken for an active fund manager or, worse, a hedge fund manager," he said.

The most important lessons the younger Bogle says he learned from his father have nothing to do with the market. He remembers visiting Vanguard headquarters on weekends, when the only person they'd encounter was the night security guard. "And my dad would know him by name, and he'd ask him about his kids and wife by name," he recalls.

Alternatives Strategy Edition

INVESTING IN PEER-TO-PEER / MARKETPLACE LENDING

A Primer for Institutional Investors

Free LiveINSIGHTS Web Conference

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Regulatory changes and technology continue to disrupt the traditional lending markets, opening up new opportunities for institutional investors. But it's still early days. While lending generates more than $870 billion in annual revenues, Marketplace/Online players currently capture less than 2%.

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They will discuss why more and more institutional investors with forward vision are evaluating the opportunities and risks presented by this new world.

PANELISTS

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Principal
Blue Elephant Capital Management

MATT BURTON
CEO/Co-Founder
Orchard Platform

MICHAEL SERRILL
Assistant Managing Editor
Bloomberg Markets

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Bloomberg Markets

Bogle throws himself daily into 'this battle to build a better industry.'

CLIFF ASNESS

CO-FOUNDER
AQR CAPITAL MANAGEMENT

CLIFF ASNESS WILL sometimes boast that AQR Capital Management runs the type of hedge funds Bogle hates least, because their strategies are transparent and their fees are lower than most. Bogle doesn't contradict him on this, and he quite likes Asness as a person. They have in common a willingness to stick their necks out.

"I do have a natural tendency to take the other side of whichever way the world is leaning, perhaps too much for my own good at times," Asness, 48, writes in an e-mail. He figures that his most Bogle-esque work is the research he has done taking hedge fund managers to task for charging too much and hedging too little.

Bogle, who has authored some 10 books and always has a paper or article in the works, appreciates the extensive writing Asness does. He says he admires his way with words, and that's especially true when the words are about Bogle himself. "Jack's math, as he said, has never been wrong and never will be wrong," Asness said during a panel discussion at the *Bloomberg Markets* Most Influential Summit in September.

Responded Bogle: "Would you repeat that, Cliff?"

PHOTOGRAPH BY **CHRISTOPHER LEAMAN**

JEREMY SIEGEL

PROFESSOR
UNIVERSITY OF PENNSYLVANIA
WHARTON
DIRECTOR OF RESEARCH
WISDOMTREE INVESTMENTS

BOGLE BLURBED THE Wharton professor's book years ago, and Jeremey Siegel's research figured prominently in Bogle's writing. Then Siegel joined up with WisdomTree Investments in 2006 to create a new type of ETF as an alternative to traditional index investments that are weighted on the market capitalization of stocks. Siegel's funds were built on so-called fundamental indexes, which used such things as dividends and earnings to establish stock weightings. Siegel's new approach didn't sit well with Bogle.

They ended up debating in the op-ed pages of the *Wall Street Journal*. Bogle recalls the specifics of their exchange as if it were yesterday. Those who favored capitalization-weighted indexes were like astronomers who kept the Earth at the center of the solar system long after it had been shown that the planets revolved around the sun, Siegel wrote. He cast himself as Copernicus with a new paradigm for understanding markets. "They got it absolutely backward," says Bogle, still irritated by any implication that his model of the investing universe is wrongheaded.

Siegel, 69, says the stock bubble of the late 1990s is what changed his thinking. "Did I really want 35 percent of my wealth in overpriced Internet and tech stocks?" Siegel asks. "No!" But that's what a broad U.S. stock index fund did for investors during that mania. It followed the crowd as the crowd went mad.

Siegel still calls Bogle a hero and a good friend, while admitting that Bogle views him as having strayed from the true path. He believes Bogle will be proven wrong in due course as fundamental index ETFs develop a long-term record of superior risk-adjusted returns. "The proof will be in the pudding," he says. WisdomTree had $45 billion in assets under management as of mid-February.

On one point, Siegel says, he's a devoted disciple of Bogle: the virtue of low costs. Several fund managers, whom he declines to name, have told Siegel that WisdomTree could charge more—that WisdomTree's fees are undercutting the market. "But I would have it no other way."

JEREMY SIEGEL SAYS THE TECHNOLOGY STOCK BUBBLE CHANGED HIS THINKING ABOUT CAP-WEIGHTED INDEXING. 'DID I REALLY WANT 35 PERCENT OF MY WEALTH IN OVERPRICED INTERNET AND TECH STOCKS? NO!'

BLOOMBERG TIPS

Mapping the Fund World

For a high-level overview of the fund universe, you can use the Fund Map (FMAP) function. Type **FMAP <Go>** on the Bloomberg Professional service. Click on the arrow to the right of Source and select All. Next, click on the arrow to the right of View By and select Fund Type. For Region, select All Regions, and for Pie Size, select Tot Assets USD. Finally, click on the arrow to the right of Analyze, select the metric you want to track, and press <Go>. Select Total Return 1Y for a chart that represents one-year returns on a color scale. To view Vanguard's funds, click on the arrow to the right of Source again and select Fund Family. Enter *VANGUARD* in the field to the right and click on Vanguard Group Inc in the list of matches. For lists of the firm's mutual funds or ETFs, click on the outer ring. JON ASMUNDSSON

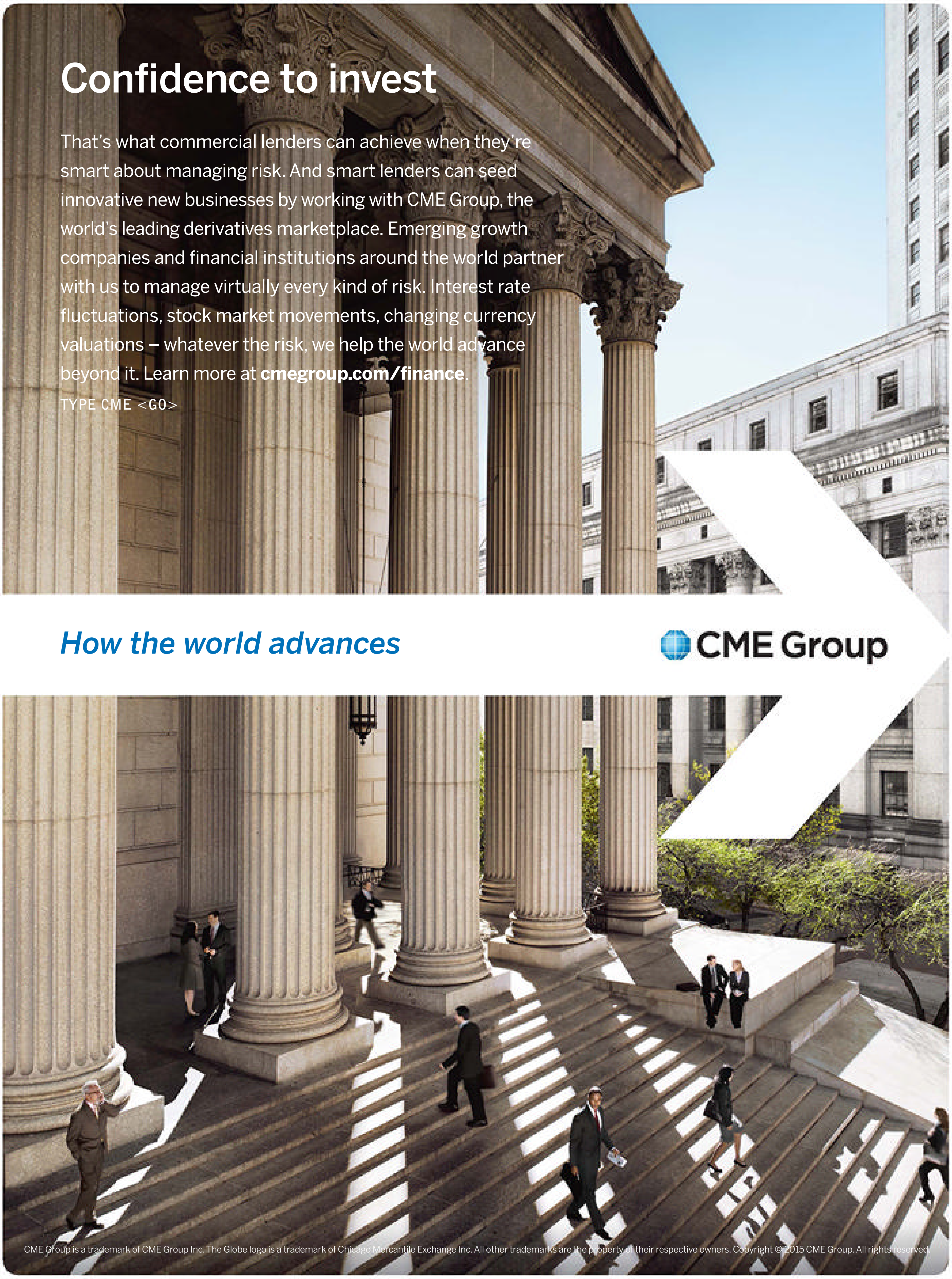
ANDREW LO

PROFESSOR MIT SLOAN
CHAIRMAN ALPHASIMPLEX GROUP

ANDREW LO, a professor at the Massachusetts Institute of Technology, is known for his "adaptive market hypothesis." This starts with the Bogle-like idea that efficient markets can't be consistently outperformed and incorporates concepts from behavioral economics about how human psychology affects investing. (Bogle says with a laugh that he always saves Lo's academic papers but doesn't always understand them.)

Lo is also chairman of fund manager AlphaSimplex Group, where he's trying to put his ideas into practice with passive investment products that incorporate active trading strategies and essentially run on autopilot. One of his strategies attempts to identify trades that reflect the collective wisdom of the entire hedge fund industry, a process known as "beta replication." Another tries to take advantage of cycles of market volatility. "I think the idea of passive investing has really been transformed by technology," Lo says. "Now, you can be passive even though you're not market-cap weighting and engaging in this simple buy-and-hold strategy."

Lo, 54, readily admits that Bogle won't approve, even though he views his financial product innovation as building on the legacy of passive, index-based investment. "It really marries behavioral finance with the basic observation that passive investing can add value," Lo says. "When you couple those two together, you can actually do better than the simple index funds. But it's very much along the same lines with what Bogle was trying to do. That's why I actually agree with him, although he may not agree with me."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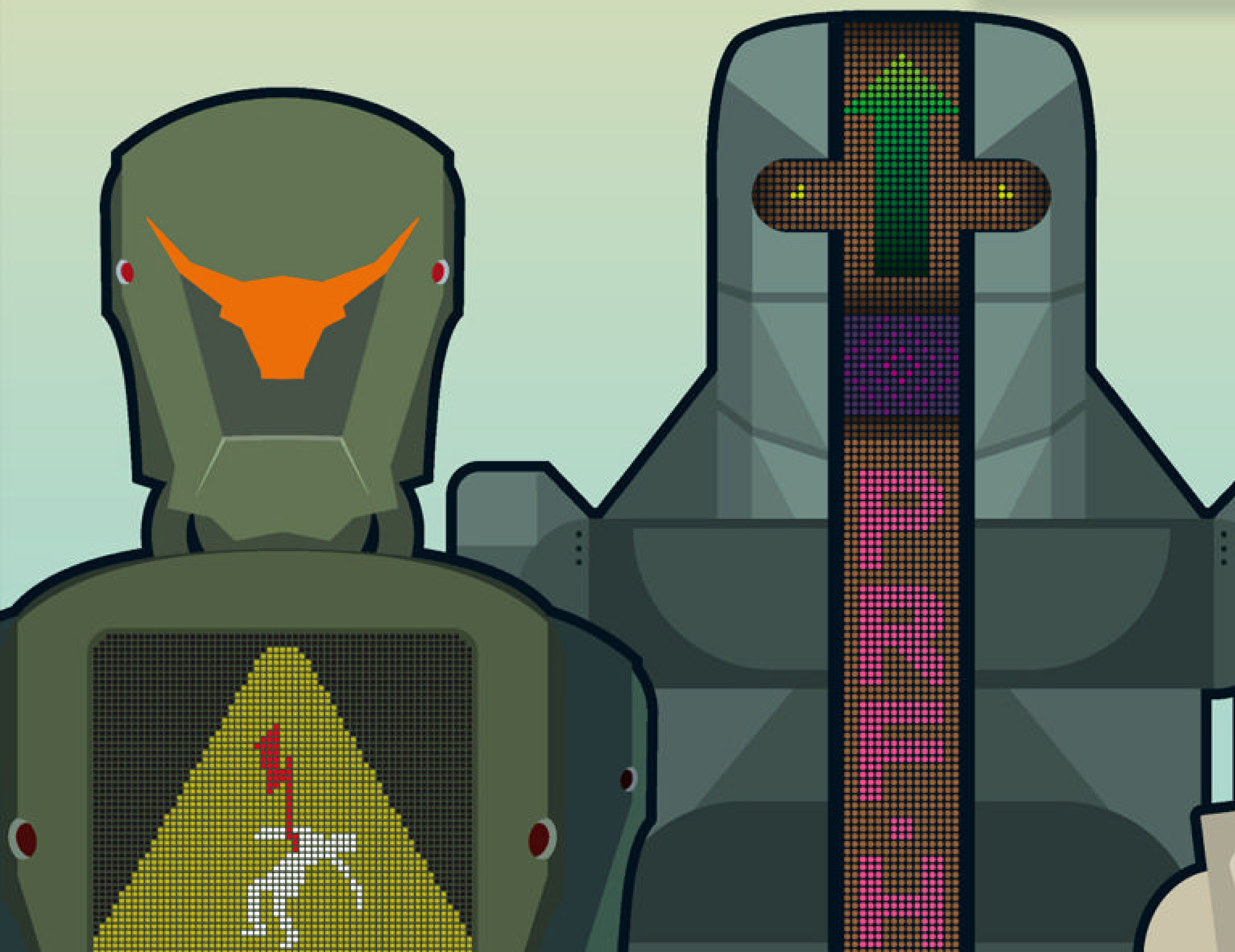
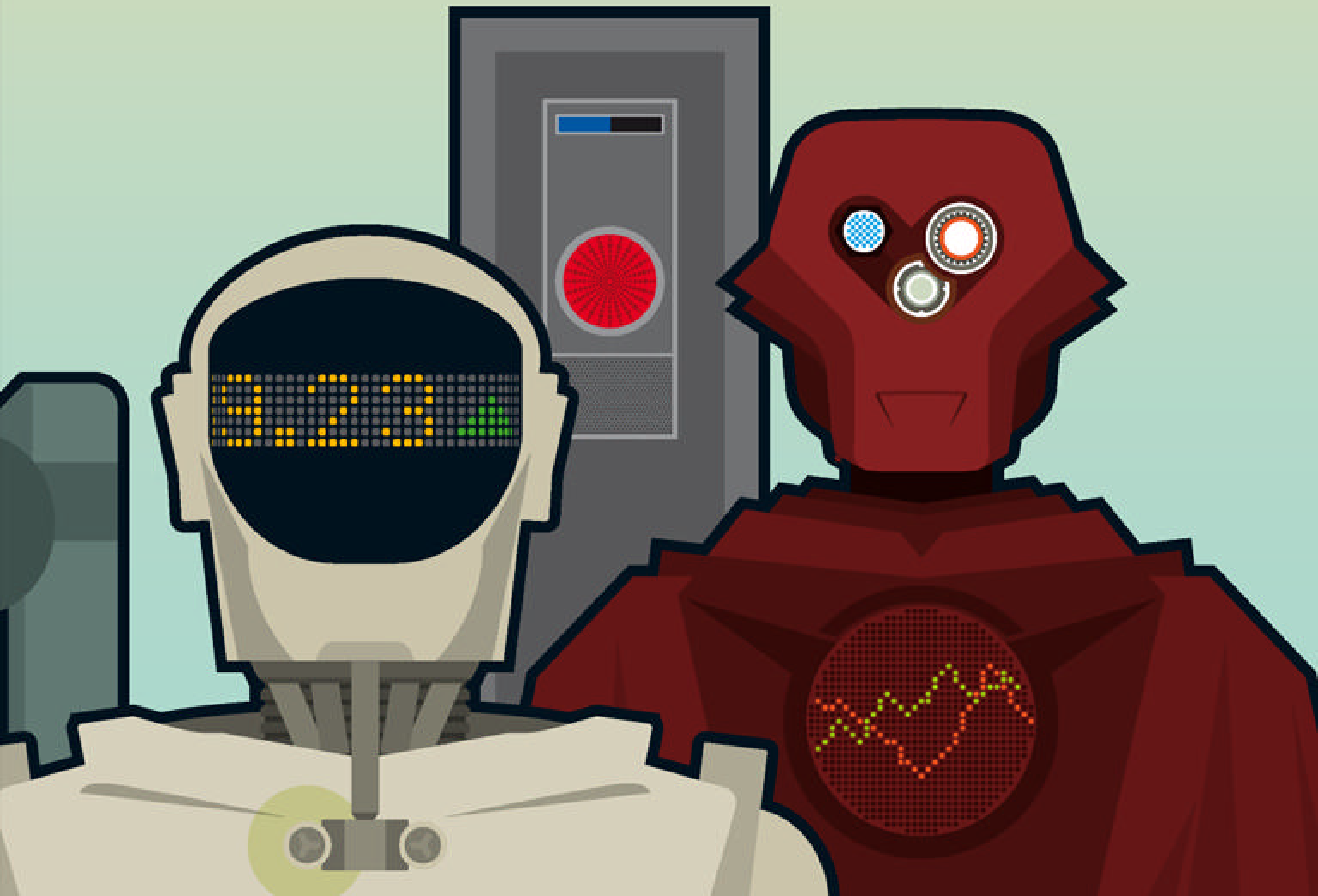


BY ANTHONY EFFINGER AND ERIC BALCHUNAS

SMART-BETA ETFs USE MACHINES TO OUTPERFORM HUMANS, BUT SOME CAN BE LESS THAN BRILLIANT.

GORITHMS!

ILLUSTRATIONS BY 5W731



FEW PEOPLE HAVE PROFITED MORE FROM THE SO-CALLED SMART-BETA CRAZE THAN TOM DORSEY. A NEW EXCHANGE-TRADED FUND THAT HE RUNS USING A CENTURY-OLD CHARTING METHOD TOOK IN $1.2 BILLION LAST YEAR. THEN, IN JANUARY, HE SOLD HIS

22-person investment firm, Dorsey, Wright & Associates, to Nasdaq OMX Group for $225 million.

Dorsey calls himself a money manager, but his methods are more robot designer. He says so himself, proudly. If Dorsey and his team got abducted from their Richmond, Virginia, office by aliens, their algorithms could keep picking investments for the firm's new money magnet, the First Trust Dorsey Wright Focus 5 ETF, forever. "Once a quarter, we press a button," Dorsey says. The Focus 5 algorithm then generates a list of investments, and First Trust Portfolios, his partner company, executes them. Otherwise, they don't meddle with the robot. "We just need someone to press the button."

That, for Dorsey, is the essence of smart beta, or strategic beta, or scientific beta, or factor-based investing, or fundamental indexing, depending on which Ph.D. is talking. (Most smart-beta funds are designed by finance geeks.) It's index investing with key twists, all of them rules-based, with no active management required. Most smart-beta funds track custom indexes. Some are simple variants of the Standard & Poor's 500 Index and do what they say on the box. Others are hand-crafted and small batch, made by people with little more than a stock-filtering system and a dream.

The idea is money—as marketing, at least. There are almost 400 smart-beta funds in the U.S. right now, and they account for $400 billion, or 20 percent of all assets, in domestic ETFs, according to Bloomberg Intelligence. That's up from zero in May 2000, when the first prototypes—one iShares ETF aimed at growth and another at value—marched out of the lab and onto exchanges.

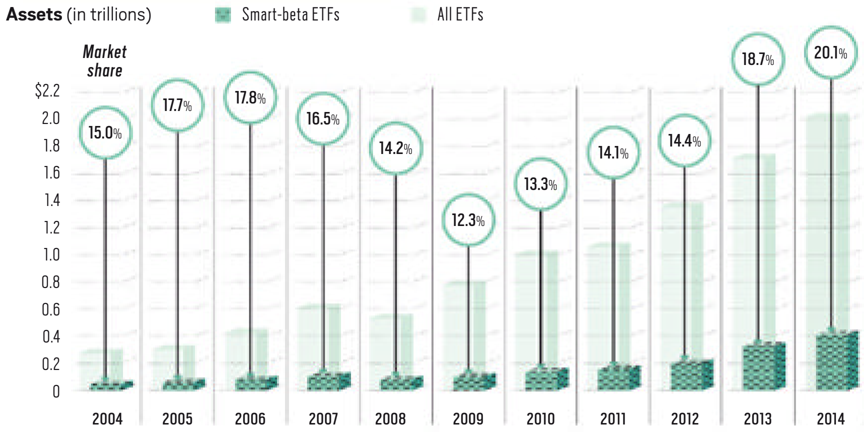
Smart-beta believer **Tom Dorsey** sold his firm to Nasdaq for $225 million.

JAY PAUL

Like any Wall Street bonanza, this one has drawn imitators, innovators, and possibly a few hucksters, according to the U.S. Financial Industry Regulatory Authority, which included smart beta on a list of eight product categories that it plans to scrutinize for sales violations this year. "For individual investors, products tracking these indices may be complex or unfamiliar," Finra said in a Jan. 6 letter. "It remains an open question how the indices and products tracking

GROWTH SPURT

ETFs have grown into a category with more than $2 trillion in U.S. assets. Smart-beta funds now account for one-fifth of that figure.



Source: Bloomberg

them will behave in different market environments."

No one has claimed credit for coining the now ubiquitous term *smart beta*, which, in just two words, makes a big, market-beating promise. Among the financerati, *beta* means return you get simply for taking the risk of owning stocks. The much rarer *alpha* is extra return from spotting something that the market missed. Despite what human managers say, alpha is rare. Smart-beta enthusiasts accept that and try to better mine the returns from beta using an eclectic range of strategies, filtered for various factors and united by their set-it-and-forget-it rule books.

One can, for example, buy all the stocks in the S&P 500 in equal amounts (giant Apple down to tiny Diamond Offshore Drilling) with the Guggenheim S&P 500 Equal Weight ETF, rather than following the index's decades-old rule of giving greater weight to bigger market capitalizations. Other funds weight the index by volatility, dividends, sales, book value, or growth in earnings.

One of the most popular smart-beta ETFs is the WisdomTree Europe Hedged Equity Fund, which investors are using to surf the wave of money the European Central Bank is releasing to combat deflation. The dollar-based fund buys euro zone exporters but hedges against swings in the euro. That saved Europe Hedged from ruin last year when the currency tumbled 12 percent against the dollar, a move that would have turned its gains into losses. As of Feb. 17, the fund had taken in more money in 2015 than any other ETF, smart beta or otherwise, with $4.3 billion.

Many smart-beta funds encode even-more-complex rules into their operating systems. ProShares Large Cap Core Plus, for instance, makes the WisdomTree fund look as clunky as a Commodore 64. ProShares Core Plus uses borrowed money—leverage—to buy stocks that meet 10 different targets, including value, growth, and price momentum. "It allows you to put a little more money where your mouth is on the long side," says Michael Sapir, founder and CEO of ProShare Advisors.

ProShares Core Plus also sells short stocks that miss the targets, betting they'll decline. The strategy was designed by Andrew Lo, a professor of finance at the Massachusetts Institute of Technology Sloan School of Management, and Pankaj Patel, now an analyst at Evercore Partners. Between the leverage and the short sales, Core Plus looks like an exchange-traded hedge fund. From its inception in July 2009 through last year, the fund returned 166 percent, compared with 156 percent for the S&P 500.

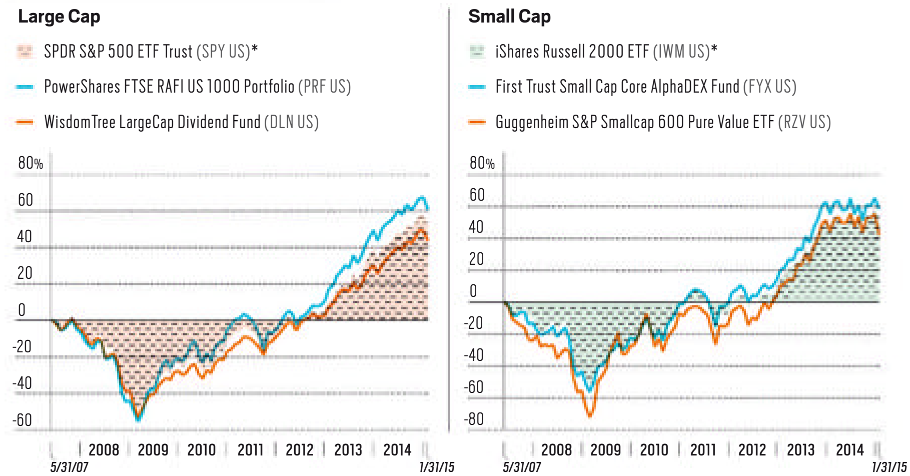
What smart beta does best is sever the link between the price of a stock and its weight in an index, says Rob Arnott, chairman and co-founder of Research Affiliates in Newport Beach, California. Arnott has become a demigod in the movement since co-authoring the 2005 paper "Fundamental Indexation." Research Affiliates indexes are used by fund companies to manage $180 billion of assets. "By linking the weight to price, the more expensive something is, the bigger your holding," says Arnott, who received a bachelor's degree in economics, applied mathematics, and computer science from the University of California at Santa Barbara. That means you're buying some stocks because other people like them, he says, not because they're better companies. "Why on earth would you want to do that?" he asks.

Arnott and his chief robot designer, Jason Hsu, a finance Ph.D., unveiled the index that drives the $4.3 billion PowerShares FTSE RAFI US 1000 Portfolio in 2005 after testing myriad measures for company size, even the number of employees. The factors Arnott and Hsu settled on: book value, sales, dividends, and cash flow. Their algorithm requires that the fund sell stocks that are judged pricey by those measures and buy others deemed to be cheap.

> **WHAT SMART BETA DOES BEST IS SEVER THE LINK BETWEEN THE PRICE OF A STOCK AND ITS WEIGHT IN AN INDEX, SAYS ROB ARNOTT, CHAIRMAN AND CO-FOUNDER OF RESEARCH AFFILIATES.**

HOW SMART?

While some smart-beta ETFs have outperformed market indexes, others have lagged.



Market cap–weighted ETFs that closely track the S&P 500 and Russell 2000, respectively. Source: Bloomberg

So far, Arnott's robot is working—really well. PowerShares FTSE RAFI has beaten the S&P 500 since it started on Dec. 19, 2005, with a total return of 120 percent versus 103 percent.

The beauty of that fund, and smart beta in general, is that the machine will make hard trades when the human won't, Arnott says. It won't hesitate to pick up damaged goods at a fire sale, and it will hang on when the world looks ready to end. That, according to Warren Buffett, is when to buy, and it's exactly when most humans freak out and sell instead.

Take 2009. Lehman Brothers had failed the year before, and the financial system veered toward collapse. Human traders dumped anything that looked like a bank or brokerage. FTSE RAFI, on autopilot, more than doubled its positions in Bank of America and Citigroup. Then, government measures to end the panic took hold, and the fund returned 42 percent for 2009, compared with 26 percent for the S&P 500.

A client for whom Arnott manages money in a separate account that mirrors FTSE RAFI begged him not to rebalance into bloodied financial stocks; Arnott yielded, and the client lagged behind the fund by 7 percentage points. "The more uncomfortable the rebalance, the more likely it is to be profitable," Arnott says. "The rebalance into financials was predestined because all we do is maintain the weights of the sectors to reflect their weight in the macro economy. The financial sector hadn't gone away. It was just reeling." And Arnott's algorithm mandated that it buy more to rebalance, as insane as that looked at the time.

Many smart-beta believers are converts from other disciplines. Dorsey's story, for instance, borders on the spiritual. In 1979, after leaving his job as a stockbroker at Merrill Lynch, he started the options department at Wheat First Butcher Singer and discovered the book *The Three-Point Reversal Method of Point and Figure Stock Market Trading*. First published in 1947, it described a simple technique for tracking stocks that the author, A.W. Cohen, said could divine price patterns. The point-and-figure method has been around since the 1800s; Charles Dow, creator of the namesake index, even used a version to pick stocks, according to Dorsey. It's also absurdly low tech: You simply track a security's moves with columns of X's, for up, and O's, for down. Get the right pattern of X's, you buy; O's, you sell.

The simplicity dazzled Dorsey, and in 1987, he started his own firm to teach the method to brokers. By the time the idea of smart beta came along, his firm, Dorsey, Wright & Associates, had taught thousands how to use it for their clients. "You could look at this like my ministry and the financial advisers as my ministers," he says.

Since then, Dorsey Wright has developed 82 different models for investing in stocks, ETFs, and country funds. Dorsey's computerized system holds a point-and-figure bake-off between every ETF, say, in his universe, pitting one against all, then another against all, and so on, to see which is sending the strongest buy signal. Brokers using Dorsey Wright pay for the recommendations. More recently, fund companies, including First Trust and Invesco PowerShares, have used his models to guide purchases in 17 ETFs and mutual funds, for which they pay Dorsey Wright a fee. The Focus 5 ETF, which launched in March 2014, uses point-and-figure methods to buy just five other ETFs offered by First Trust in Wheaton, Illinois, each of them industry-specific. Brokers already using the Dorsey Wright models flocked

BLOOMBERG TIPS

How to Spot a Smart-Beta ETF

You can use the ETF Finder (ETF) function to spot smart-beta funds. Type **ETF <Go>** on the Bloomberg Professional service. Pick any category you want from the drop-down menus at the top; try the equity asset class and the health-care industry, for instance. In the bottom half of the screen, you'll see the ETFs that meet those criteria. Bloomberg classifies ETFs according to their weighting methodology, which is shown in a column on the right side of the screen. Any fund weighted by something other than "Market Cap" is a smart-beta ETF. In this list, we can see smart-beta ETFs with index weightings ranging from "Equal" to "Fundamentals" to "Multi Factor." For further analysis, you can right click on any ETF to see more information or examine its portfolio. ERIC BALCHUNAS

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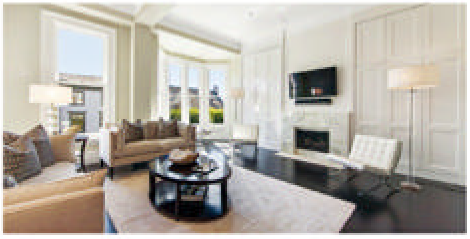

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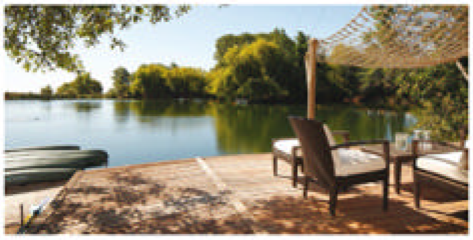

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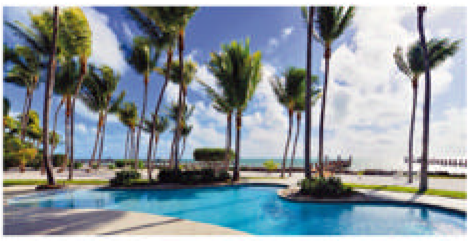

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Oceanfront 3 acre gated beachfront estate boasting 394' of private white sand beach, 3 oceanfront estates with a total of 9 BR and 9.5 baths, expansive balconies, 2 oceanfront pools, and 3 docks. **$9,000,000**. Leslie Leopold. Leslie.Leopold@sothebysrealty.com

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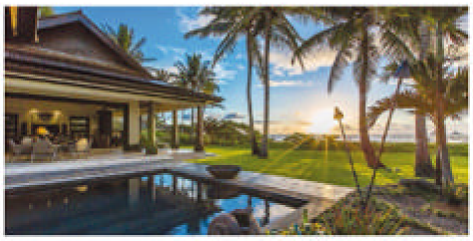

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Paradise found indoor/outdoor resort lifestyle on over 1 acre estate with 5 BR, 6.5 baths, spa, cabana and pool. Fronting over 200 linear feet of Kailua's sandy beachfront. WEB: D8X2HT. **$23,000,000**. Judith Whitfield. judith.whitfield@sothebysrealty.com

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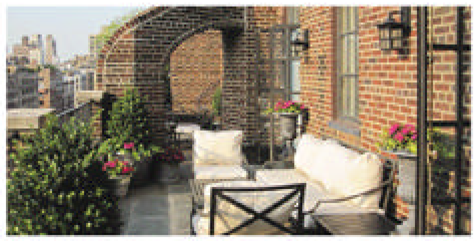

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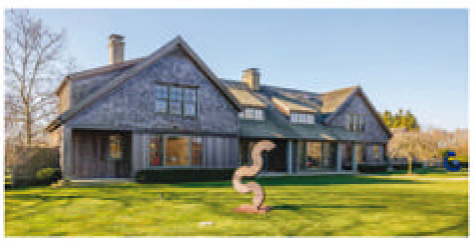

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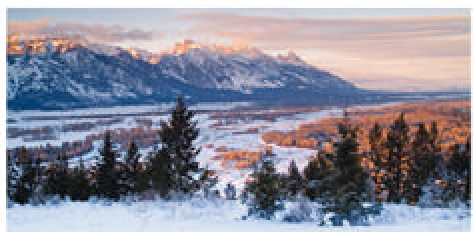

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to it. By year's end, Focus 5 had $1.62 billion under management, the most of 200 ETFs launched last year. And then Nasdaq came calling, looking to get a piece of the smart-beta boom and reduce its dependence on low-margin trading, Dorsey says. It bought the whole firm.

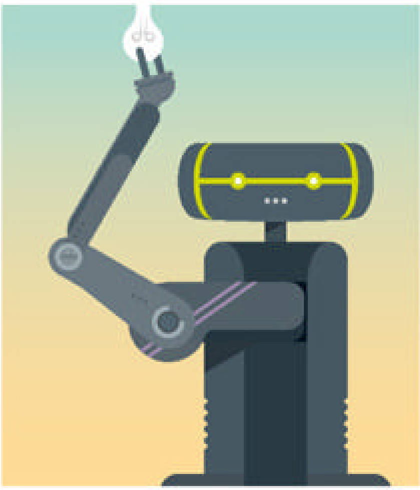
The craze is driving traditional indexers nuts. "Don't mention smart beta in this office!" Jack Bogle, 85, founder of Vanguard Group and father of the index fund, tells *Bloomberg Markets*. (See "Is There a Next Jack Bogle? Not If You Ask Jack Bogle," page 54.) "I don't even know what it means. Baloney. Marketing!"

Rick Ferri, founder of Portfolio Solutions in Troy, Michigan, says smart beta is a ploy for active managers to retake some of the billions lost to Bogle and his low-cost indexes. If an active manager has an investment strategy that shows positive returns over the past decade or so, and it can be encoded in an algorithm, he can call himself an indexer, charge higher fees for his secret sauce, and kick back and get rich, Ferri says. "Everything that used to be active management became fundamental indexing," he says.

SMART BETA IS A PLOY FOR ACTIVE MANAGERS TO RETAKE MONEY LOST TO LOW-COST INDEXES, SAYS RICK FERRI, FOUNDER OF PORTFOLIO SOLUTIONS. 'THEY'RE MAKING REALLY GOOD JUICE ON THIS,' HE SAYS.

The Janus Velocity Tail Risk Hedged Large Cap ETF has many of the things that smart-beta critics such as Ferri love to hate. Started in June 2013, the fund returned 6.8 percent in 2014, compared with 13.7 percent for the S&P 500, even though it invests in S&P 500–tracking ETFs. It underperformed because it paid for derivatives that protected it from tail risk—the slim chance that something would go really wrong. That insurance lowered its risk, certainly, but the fund captured just 50 percent of the index's return, after expenses. Those totaled 0.71 percent, or $71 on each $10,000, compared with 0.39 percent, or $39 per $10,000, for Arnott's PowerShares FTSE RAFI. "They're making really good juice on this," Ferri says.

Velocity Tail Risk doesn't trade much either. Some days fewer than 1,000 shares



change hands, making it harder for sellers to find buyers. Last year, the average difference between an offer to buy and an offer to sell was 0.31 percent, or 62 times the average spread in the SPDR S&P 500 ETF Trust, which closely tracks the index. The Velocity Tail Risk fund is designed to give up some gains in exchange for peace of mind, says Nick Cherney, head of exchange-traded products at Janus Capital Group in Denver. "In major bull markets, we don't do as well," Cherney says. "Our real value comes on the worst days."

Newer funds have become even more esoteric. The AlphaClone Alternative Alpha ETF searches regulatory filings to find stocks owned by hedge funds and also has the option to apply a partial hedge by shorting the stock market. The ALPS US Equity High Volatility Put Write Index Fund sells options on stocks prone to big swings and distributes the proceeds to investors. The Gold Shares Covered Call ETN sells options on another ETF that holds gold.

Some money managers say smart beta has become too clever. Peter Mallouk, president of Creative Planning, a financial advisory firm in Leawood, Kansas, sees a lot of marketing B.S. "I think a lot of people are going to be negatively surprised by smart beta," he says.

William Bernstein, a retired neurologist in Portland, Oregon, who's written four books on investing, is also skeptical. "Is there a lot of dumb money going into smart beta?" he asks. Probably, he says, and it makes him wary. "When I own an asset class, I ask how savvy my co-owners are. Here, you're getting an influx of undisciplined investors who think they're getting a free lunch."

Dorsey plays pool in a league in Richmond. After the Nasdaq purchase of his firm, he could doubtless take more time to hone his skills. But he plans to stay on as a consultant. He has his copy of Cohen's book on his office wall, and he still marvels at how his system just chugs along. Yet even Dorsey recognizes that robots have their limits. "The more esoteric you get with ETFs," he says, "the more they don't work."

Best to stick with a 100-year-old charting system, Dorsey says. Simple though it may be, the fees and expenses on Focus 5 are 0.94 percent a year, which is high even for a smart-beta fund. Dorsey says most of that goes to First Trust and that his firm gets about 0.2 percent.

But the expenses could be worth it. The oldest ETF using a Dorsey Wright model, PowerShares DWA Momentum Portfolio, has returned 82 percent after fees since it was started in March 2007, compared with 78 percent for the S&P 500. That's not exactly a Terminator triumph, but smart beta isn't a Skynet strategy for world domination. It's about incremental wins over time that compound their way to greater wealth. Leave the robot alone and that's what you get—provided you have the right robot.

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Nigel Farage, a potential power broker in May's U.K. election, has shifted the political debate—as parties across

Europe turn against immigration and the EU.

BY STEPHANIE BAKER

PHOTOGRAPHS BY WILL SANDERS

A thorn in the side of mainstream politicians, the **leader of the U.K. Independence Party** campaigns house to house in Kent.

HE'S ALREADY WON

ON A RAINY FRIDAY NIGHT IN THE middle of January, Nigel Farage stands in front of a small crowd at the local soccer team's clubhouse in Ramsgate, a decaying port town in Kent County on England's south coast. The leader of the U.K. Independence Party is there to kick off his campaign for a seat in the British Parliament in the May 7 general election. Alongside a purple and yellow "Join the People's Army" UKIP banner, Farage delivers a jokey, self-deprecating speech laced with acid allusions to what he sees as the great twin threats to British culture and the economy: immigration and the European Union.

Farage, a former commodities trader with a smoker's cough and a horsy grin, has the audience of 150 or so people in his thrall as he rattles off numbers to bolster his point that EU rules allowing the free movement of people across member states have led to the ruin of the British economy. They gasp in disbelief when he tells them that net migration surged to 260,000 last year, up from just 17,000 in 1983, when it was "about the size of two large villages." "People are sick of open-border immigration," he says to a throng that's mostly male, mostly over 50, and mostly new to UKIP. "It's irresponsible madness to not have control."

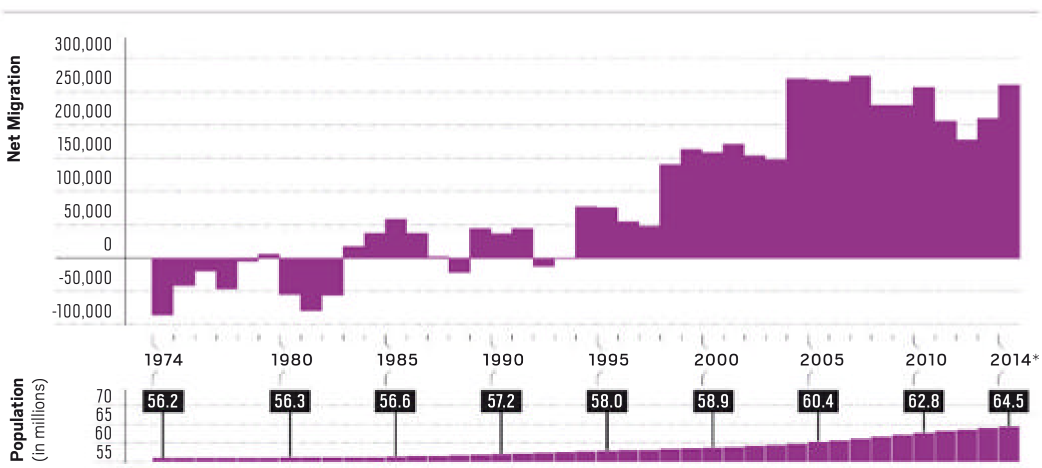
It's a message that has transformed Farage from gadfly to agenda setter since UKIP won more seats than any other U.K. party in last year's European Parliament election. He's forced the governing Conservatives and the opposition Labour Party to come up with their own immigration-control measures. Prime Minister David Cameron, who once wrote off UKIP as "a bunch of fruitcakes, loonies, and closet racists," has embraced Farage's central rallying cry, vowing to hold a referendum on EU membership before the end of 2017 if the Tories return to government following the general election. In its election platform, Cameron's party pledges to bar immigrants from receiving welfare benefits until they've been in the country for four years. Labour says it will hire 1,000 new border guards. In the polls, which show that immigration is the most important issue to voters, UKIP has leapfrogged the Liberal Democrats to become Britain's No. 3 party. All of this leaves Farage hoping he can be a power broker after the election, since neither the Conservatives nor Labour are in a position to win a majority.

Farage's polemics echo across political battlegrounds on the Continent. After seven years of economic recession and stagnation, anti-immigration, anti-EU parties are on the rise. From the right come parties that, like UKIP, draw strength from anti-immigration sentiment: the Sweden Democrats, the Danish People's Party, and France's National Front, whose leader, Marine Le Pen, is seen as a viable contender for president in the 2017 elections. From the left come parties that share UKIP's hostility to Brussels, big banks, and other forces that seem beyond people's control: Spain's Podemos and Greece's Syriza, whose leader, Alexis Tsipras, became prime minister in January. "Across Europe, it's now fairly

POLITICAL FLASHPOINTS

A swift and pronounced rise in immigration to the U.K. in the mid-2000s, largely from Poland and other Eastern European nations, has stirred a heated debate ahead of the May 7 election.

An Immigration Surge



*Twelve months ended in the second quarter.
Source: Office for National Statistics

typical for between 10 to 20 percent of the electorate to back some form of nationalist party," says Peter Kellner, president of YouGov, a U.K. polling company. "Traditional safe jobs that went with big places of production—coal mines, shipyards, car factories—are dying and being replaced by less secure jobs. People blame immigration for a phenomenon that actually has other roots."

JUST DAYS BEFORE FARAGE LAUNCHED his campaign in Ramsgate, he is raging against his pet peeves in enemy territory: Strasbourg, France. Since 1999, Farage has been a member of the European Parliament, which meets in both Brussels and Strasbourg—an institution that he has simultaneously served in and railed against. The pub-loving UKIP leader has committed to an alcohol-free January, his first in eight years, and he's fighting the urge for a glass of Bordeaux to accompany his steak frites at Le Cornichon Masqué, a favorite haunt. He's fresh from controversy: Following the January terrorist shootings in and around Paris that killed 17 people, he sparked outrage among mainstream politicians when he spoke in the EU Parliament of a homegrown "fifth column" of Islamic militants bent on taking down "our Judeo-Christian" way of life.

Farage, who turns 51 on April 3, is wearing a new navy blue silk tie inscribed with the mock Latin phrase "non illegitimi carborundum" ("don't let the bastards grind you down"), a reference to his run-ins with political opponents and the London press. Over lunch, he utters the kind of shock-and-awe statements that rile those who say he's peddling a dangerous ideology. What's wrong with hardworking, tax-paying migrants from EU member states in Eastern Europe coming to the U.K.? "Why don't we open the doors to the whole of Africa?" he says. "We've got into a political and economic union with Romania. So you might as well let Africa in as well."

That's the crux of Farage's argument: that cheap labor is swamping the U.K., stealing British jobs and depressing wages. He says immigration is the cause of a 15 percent drop in real wages since 2008, citing a figure from the 700,000-member GMB union. Farage—who's married to a German, Kirsten Mehr, with whom he has two teenage daughters—says EU immigrants from Eastern Europe are the main culprits in turning Britain into a "cheap-labor economy." "We'd be quite happy to have a free-movement deal with France and Germany, because wages are roughly similar," he says.

The rebound in the U.K. economy, which

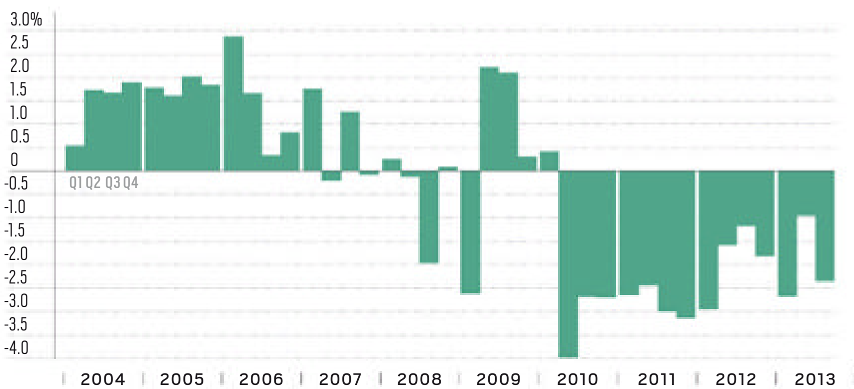
Government **posters**, such as this one from 2013, spawned controversy—and were discontinued.

UK HOME OFFICE

A Squeeze on Wages

While many studies show that immigrants contribute more to the economy in taxes than they receive in welfare benefits, Farage and other politicians blame non-British "cheap labor" for falling incomes in the U.K. in recent years.

Real Wage Growth
(average weekly earnings deflated by the retail price index; percentage change from the same quarter a year earlier)



WHAT FARAGE SAYS

'People are sick of open-border immigration. It's irresponsible madness to not have control.'

'Why don't we open the doors to the whole of Africa? We've got into a political and economic union with Romania. So you might as well let Africa in as well.'

'With me, whether you like it or not, what you see is what you get.'

expanded 2.6 percent in 2014 after six years of slow or negative growth, has failed to dent Farage's popularity. During the 12 months through June 2014, according to the U.K. Office for National Statistics, net migration rose by 43 percent to 260,000 as workers from across the EU flocked to the fastest-growing economy in Europe. The Organization for Economic Cooperation and Development estimates there are 670,000 Poles living in the U.K. Farage has played on the economic anxiety of ordinary Brits outside of booming London, which is growing faster than any other U.K. region. Finding fertile ground among people who haven't benefited from the recovery, he blames the influx of EU migrants for straining welfare and health-care systems already crippled by austerity-led budget cuts.

Farage on stage in the run-up to last year's European Parliament elections. UKIP won more seats than any other U.K. party.

IAN FORSYTH/GETTY IMAGES

"Farage is a dangerous piece of work," says Alan Sked, a professor of international history at the London School of Economics and Political Science. Sked, who was a founder of UKIP in 1993, quit the party four years later, citing its lurch to the far right. He says Farage is a racist, a charge Farage vehemently denies. "Sometimes I think UKIP is my Frankenstein, that I've created a monster," Sked says. "They're a reactionary party trading on prejudice without any rational or intellectual basis. The economy is aided by immigration."

Farage dismisses the many studies that say immigration has been a boon to the U.K. economy. "Pretty skinny stuff," he says, eating his steak. "None of it prices in the cost of building new primary schools or new roads or extra beds in hospitals." Yet a study by University College London's Centre for Research & Analysis of Migration established that from 2001 to 2011, migrants from 10 Eastern European countries (Bulgaria and Romania joined the EU in 2007) contributed 12 percent more in taxes than they received in benefits; the figure for migrants from 15 countries in Western Europe was 64 percent.

By championing a program to leave the EU, slash taxes, and enact laws to limit immigration, UKIP has turned itself into a British version of the Tea Party in the U.S. In January, YouGov's Kellner predicted that UKIP would likely win six or so of 650 seats in the May election, while mounting a serious challenge for another 20. Like the Tea Party, UKIP's clout is greater than its numbers—and unlike the Tea Party, UKIP supporters have a single charismatic leader to rally around, heightening the party's power.

For months, the Conservatives and Labour have been hovering at about 32 percent each in the polls. The Tories, who are closer to Farage ideologically than Labour is, may need UKIP to prop up the next government if they don't win an outright majority. Farage says he's not interested in being part of a formal coalition and will only do a postelection pact with the Conservatives to support key legislation, like the budget, if the Tories push ahead with an EU referendum. With Farage beating the drums, the U.K. may be marching toward a "Brexit," as it's known. In January, a YouGov poll found 43 percent in favor of remaining in the EU, 15 percent undecided, and 37 percent wanting out, up from 34 percent in 2012. The prospect of a Brexit has prompted business leaders to speak out. "Having the U.K. be part of Europe is the best thing for all of us," Gary Cohn, president of Goldman Sachs, told the BBC in January.

As much as Farage may appeal to euroskeptic Tories, he's failed to win the backing of deep-pocketed City of London grandees who have traditionally financed the Conservative Party. Crispin Odey, founder of Odey Asset Management, a $12 billion London hedge fund firm, has given UKIP £26,000 since 2010, according to the U.K. Electoral Commission. But he says he can't count himself a Farage man and doesn't think the candidate

can effect real change. “Sadly, as much as I like him, he’s just not clever enough,” says Odey, who has all but stopped funding the Tories because he thinks Cameron hasn’t taken a hard enough line on the EU, among other things. “Do I think he will storm the palace? No. He’s not a great general but an honest if slightly mad colonel. My gamekeeper will vote UKIP. My clever political friends are not UKIP people.”

Farage’s message is seductive in its simplicity. He’s promising to abolish all taxes on anyone earning the minimum wage, or up to £13,500 ($20,800) a year; to decrease tax rates to 35 percent from 40 percent for middle-income earners; and to trim the highest rate to 40 percent, down from 45 percent. In total, UKIP’s proposed tax cuts could cost roughly £20 billion a year—or about half the U.K. defense budget—according to James Browne, an economist at the Institute for Fiscal Studies in London. That’s a much bigger tax reduction than any other party is proposing, Browne says.

Farage says Britain would be able to afford the cuts by quitting the EU, saving £8 billion a year in membership fees paid to Brussels. He also wants to chop £9 billion from the £11.4 billion foreign aid budget, getting rid of everything except immunization and clean water programs. “Their figures don’t add up,” says Christopher Snowdon, an economist at the Institute of Economic Affairs in London. “They’re not going to be able to balance the books by getting out of the EU and cutting foreign aid.”

Asked how he’d orchestrate his dream exit from the EU, Farage is hazy. Wouldn’t the U.K. have to renegotiate dozens, if not hundreds, of bilateral trade deals? “Not very difficult,” he says. “A few little bits of tidying up.” And yet more than 3 million U.K. jobs and £155 billion in exports—more than half of Britain’s total—are tied to the EU’s 27 other member states, according to the U.K. Treasury. Farage’s broad-brush approach to the facts gives euroskeptics like Odey pause. “He has no mechanism for getting from here to his ivory tower,” Odey says. “How can we have a referendum if we haven’t thought through the alternative?”

FARAGE’S APPEAL IS MUCH MORE EVIDENT in the parliamentary constituency of South Thanet, where Farage is running. He’s set up his headquarters in Ramsgate, about 32 kilometers (20 miles) east of Canterbury, in an old betting shop across the street from a shuttered exotic-pet store and a tattoo parlor. More than 1,500 people lost their jobs in 2011 when Pfizer closed the R&D site in nearby Sandwich that had developed Viagra. Another 150 jobs disappeared a year ago with the closure of Manston Airport, a former military airbase that more recently operated as a cargo and passenger hub. As the local economy struggles, Farage pins the blame largely on immigrants, even though the number of foreign-born residents in South Thanet is 9 percent, below the national average of 12.4 percent, according to 2011 census figures compiled by the Migration Observatory at the University of Oxford.

A UKIP flier making the rounds in South Thanet, about 110 kilometers southeast of London, depicts the nearby white cliffs of Dover on the English Channel wrapped in an announcement: “Sorry We’re Full.” It warns that 1 million migrants are expected to reach Britain’s shores every five years. One pamphlet in Farage’s campaign office in Ramsgate is from Christian Soldiers–UKIP. It describes the EU as “the hidden face of Satanism, a terrifying challenge to democracy and our entire Christian way of life.” Farage says he allows splinter groups to associate themselves with the party “provided they behave reasonably.” “They are not officially UKIP,” he adds.

Farage says low-wage Eastern Europeans are

UKIP’s stands on issues ranging from immigration to EU membership have sparked **protests** across Britain.

JEFF J MITCHELL/GETTY IMAGES

WHAT OTHERS SAY

‘He’s not a great general but an honest if slightly mad colonel,’ says hedge fund firm founder Crispin Odey. **‘My gamekeeper will vote UKIP. My clever political friends are not UKIP people.’**

‘Farage is a dangerous piece of work,’ says UKIP co-founder Alan Sked. **‘Sometimes I think UKIP is my Frankenstein, that I’ve created a monster.’**

At the Dog Inn in Wingham, Kent, **Farage** savors a pint of one of his favorite beverages.

undercutting British workers in South Thanet and across Britain. Locals say most of the 500 or so employees at Thanet Earth—which runs the U.K.'s largest greenhouse complex and grows tomatoes, cucumbers, and peppers on 89 hectares (220 acres)—are Poles and other Eastern Europeans. "A lot of British people feel discriminated against in their own country," Farage says. "If you don't speak Polish, no job." Judy Whittaker, a spokeswoman for Thanet Earth, says she can't comment on the number of foreign workers employed there, adding, "We don't recruit on the basis of nationality."

Beneath the low-slung ceiling of the clubhouse at Ramsgate Football Club, Farage presents himself to the crowd as the imperfect everyman. He says he did badly at school, leaving at the age of 18. He was divorced in his 30s, in a serious car crash in his 20s, and in a small-plane crash five years ago. Unlike most "career politicians" in Westminster, he says, he's had his ups and downs and got into politics only because he was fed up with getting what he felt was a raw deal. "With me, whether you like it or not, what you see is what you get," he says. "I mean what I say. I say what I mean. I'm not afraid of anybody."

Farage's campaign stump CV differs a bit from his real-life CV in tone, if nothing else. Like Cameron, Farage attended private school—Dulwich College in south London—and is the son of a stockbroker. In the 1980s, he got his start in business working as a commodities trader in London's financial district at Drexel Burnham Lambert, the now-defunct U.S. investment bank, alongside Michael Spencer, who would go on to found interdealer broker ICAP. In Ramsgate, his Drexel job becomes a job in "the metal trading industry," "working with industry," buying and selling "things that go into our cars and washing machines."

A member of the Conservative Party in the 1980s, Farage quit the Tories in 1992 after Conservative Prime Minister John Major signed the Maastricht Treaty, which paved the way for a more-integrated European Union. With members of the Anti-Federalist League, Farage helped found UKIP in 1993 to push for the U.K. to exit the EU.

Farage isn't a sure bet in South Thanet. He's run for parliament as a UKIP candidate in different seats in the last four U.K. elections and lost. This time around may be different. An Ashcroft poll in November put Farage at 32 percent, versus 33 percent for the Conservative candidate, Craig Mackinlay, another founding member of UKIP, who switched to the Tories in 2005 and remains a euroskeptic. Farage, who didn't start campaigning until January, shuttles between Brussels, Strasbourg, and Kent, juggling his day job as a member of the European Parliament with his dream job as a House of Commons MP.

In a sense, Farage has already notched a victory by shifting Britain's political landscape. If he wins in South Thanet, he'll rack up another one—one that could leave the spoiler chortling at those "bastards" on his silk tie.

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BLOOMBERG TIPS

Keeping Up With U.K. Political News

You can use the new Alerts Manager (ALRT) function to create an alert that will notify you of news about Nigel Farage. Type **ALRT <Go>** on the Bloomberg Professional service and click on Create New News Alert under News. Enter *FARAGE* in the field and click on the politician's name in the list of matches. Type 3 <Go> to specify the news sources you want to track. Once you've selected your sources, click on Save This Search. Type **BLRT <Go>** for the new Bloomberg Alert Catcher, a tool that lets you see all of your alerts in one place. For headlines of stories related to U.K. elections, type **TNI UK ELECT <Go>**. JON ASMUNDSSON


PASSEPORT
PASSAPORT
RIBBEAN COMMUNITY
EACH ENDEAVOURING ALL ACHIEVING
GUA AND BARBUDA
PASSPORT
CARIBBEAN COMMUNITY
COUNTRY ABOVE SELF
ST. CHRISTOPHER
(ST. KITTS) AND NEVIS
PASSPORT
KIBRIS C
REPUBL
ОПЕЙСКИ СЪЮЗ
ROPEAN UNION
ЛИКА БЪЛГАРИЯ
BLIC OF BULGARIA
GRENADA

THE PASSPORT KING

CHRISTIAN KALIN'S BUSINESS IS SHOWING POOR COUNTRIES THEY HAVE AT LEAST ONE RESOURCE WORTH SELLING: CITIZENSHIP.

BY JASON CLENFIELD

PHOTOGRAPHS BY ADAM VOORHES

IN 2006, THE TINY CARIBBEAN STATE OF ST. Kitts and Nevis was in deep trouble. Its sugar plantations had closed a year earlier, gang violence had given it the dubious distinction of having one of the world's highest murder rates, and only two governments on Earth were more indebted. ¶ A three-hour flight south of Miami, the country of 48,000 people was more or less unknown. Certainly, the two specks of volcanic rock in the middle of the West Indies weren't of much interest to the world's rich. St. Kitts and Nevis had run a citizenship-by-investment program—had sold passports—since 1984, but it didn't get much attention and was never a moneymaker.

Then a Swiss lawyer named Christian Kalin showed up.

Thanks to Kalin, St. Kitts has become the world's most popular place to buy a passport, offering citizenship for $250,000 with no requirement that applicants ever set foot on the island's sun-kissed shores. Buyers get visa-free travel to 132 countries, limited disclosure of financial information, and no taxes on income or capital gains. The program became so successful that St. Kitts emerged from the global financial crisis far ahead of its neighbors in the Caribbean. "It's been a complete transformation," says Judith Gold, head of an International Monetary Fund mission to the country.

Just as Kalin put St. Kitts on the map, the reverse is also true. It made his reputation. Before St. Kitts, Kalin's firm, Henley & Partners, was an obscure wealth management and immigration consultancy, and Kalin was working out of a small branch office in Zurich. Tall, with a runner's build, Kalin was known as a researcher, he says, not the hard-nosed dealmaker he's become. His claim to fame was having edited a 766-page guide to doing business in Switzerland, a tome found in every one of the country's embassies.

Soon, prime ministers from around the world were seeking Kalin's advice, in the hope he could reproduce the magic of St. Kitts, where he effectively created a resource out of thin air for a nation that had few. Many countries allow wealthy foreigners to buy residency cards through what are called immigrant investor programs, but before the financial crisis, St. Kitts and another Caribbean island called Dominica were the only ones selling citizenship outright. Since then, another five countries have gotten into the game. More are coming.

Kalin advised the governments of Cyprus and Grenada, which established citizenship-by-investment plans in 2011 and 2013, respectively. Also in 2013, he designed a program very much like St. Kitts's for Antigua and Barbuda. In 2014, Kalin crafted a plan for Malta, the smallest member of the European Union. "Pretty much every government that has even contemplated this has talked to us," he says. In St. Lucia, a task force is considering proposals from Henley and other firms. Albania, Croatia, Jamaica, Montenegro, and Slovenia are looking at programs, too.

"The bottom line"—it's a phrase Kalin uses often—"is that more states are open to making citizenship rights available through investment," he says. "And it makes a lot of sense. Why not give citizenship to people who contribute a lot to the country?"

Since revamping the St. Kitts program in November 2006, Kalin has built Henley into the biggest firm in an industry turning citizenship into a commodity. Investors spent an estimated $2 billion buying new passports last year alone, and Kalin predicts demand will grow along with the ranks of the wealthy in emerging countries. "It's a question of mobility and also security," he says. "If you're from a country that's politically unstable, where you're not sure what the future holds, you want to have an alternative."

Henley is privately held and Kalin won't discuss its revenue, but he says by the end of 2014, the firm had helped dozens of governments raise $4 billion in direct investment through citizenship or residency programs. It has also advised thousands of multimillionaires on where and how to buy a passport of convenience, collecting fees and commissions from all sides. Last year, at 42, Kalin became Henley's chairman.

The business Kalin pioneered has its share of critics, who say it gives the wealthy more room to avoid taxes and provides safe harbor to people who made their money illegally. "We've created over the past 50 years an entire shadow financial system that helps people hide money," says Raymond Baker, president of the Washington-based advocacy group Global Financial Integrity. "This is a new wrinkle in that."

In June, Bloomberg News reported that Paul Bilzerian, a former Wall Street raider who served two prison terms for fraud, was

PREVIOUS SPREAD: PROP STYLING: ROBIN FINLAY

claiming to be licensed to process citizenship applications for St. Kitts, where he now lives. Bilzerian helped an entrepreneur named Roger Ver—a provocateur widely known as Bitcoin Jesus—to purchase citizenship on the island. The two men then launched a website called Passports for Bitcoin to help people in places such as China use virtual currency to skirt local laws limiting money transfers. Learning of this, the St. Kitts citizenship unit made a hasty announcement that it wouldn't be accepting bitcoins as payment. Bilzerian declined to comment for this story.

"Like everywhere, in any industry, you have a spectrum of highly professional people all the way down to crooks and idiots," Kalin says.

Still, the passport business isn't quite like any other. It presses moral buttons that most industries don't. Is it right to turn citizenship into something that can be bought and sold? That's still an open question for most people, and Kalin admits as much. "It's sensitive," he says.

Beyond those sensitivities, there's also concern that criminals, or even terrorists, are buying second passports. The U.S. Treasury Department issued a warning in May 2014 that St. Kitts had granted passports to Iranian nationals seeking to avoid trade sanctions on the country for its nuclear program. In November, Canada announced it would no longer allow St. Kitts citizens to enter without a visa, due to concerns about "identity management practices within its Citizenship by Investment program."

St. Kitts responded the next month with a passport recall. Those issued from January 2012 to July 2014 would have to be returned and replaced with ones indicating the holder's place of birth and any other names by which he or she had been known—information that wasn't on the originals. Montreal-based Arton Capital, Henley's biggest competitor, estimates as many as 16,000 passports may be returned.

Nicholas Shaxson, author of *Treasure Islands,* a 2010 book about tax havens, says the industry feeds into a culture of corruption in poor countries that make a business of ignoring their own laws. "These smaller jurisdictions haven't got anything to sell besides 'we'll let you do anything you want,'" he says.

Developed countries run into trouble, too. Miguel Macedo, Portugal's interior minister, stepped down in November, and the head of the country's immigration services was arrested amid an investigation into influence peddling and embezzlement in its new residency-by-investment program. Macedo has denied any wrongdoing.

"All of the programs have a certain tendency for corruption, unfortunately," Kalin says. "But you have to understand that we, and I, have not paid a single cent to any government official, ever."

Christian Kalin in St. Kitts, where he developed the citizenship program that inspired an industry

GASTON BROWNE, THE PRIME minister of Antigua and Barbuda, starts his sales pitch with a geography lesson for all would-be citizens who might have trouble finding the country on a map. (It's about 60 miles [100 kilometers] east of St. Kitts.) Then, bending over the podium, he reads out a list of the country's selling points, including its "365 beaches, its pristine waters, beautiful climate." The prime minister sounds less like a statesman than

PHOTOGRAPH BY **JOÃO CANZIANI**

a tour guide, or perhaps the property developer he once was.

He's selling Antiguan citizenship, which can be had for a $200,000 donation or a $400,000 investment in real estate, plus about $60,000 in fees, a deal similar to the one St. Kitts offers. In the weeks before, Browne had delivered the same pitch at roadshows in Toronto and London. This time, in late October, he's in Singapore at the five-star Fullerton Hotel, where Henley & Partners is hosting its eighth annual Global Residence and Citizenship Conference.

The prime minister of Malta, the premier of Nevis, the commerce minister of Cyprus, and a Portuguese ambassador are here, too. They've all come at Kalin's invitation. Each will have about 15 minutes to make his pitch. For Joseph Muscat of Malta, it's the fourth appearance at a Henley event in 12 months. Malta's contract with Henley requires high-ranking government officials to speak at the firm's events "whenever requested."

The audience is 300 or so lawyers and accountants, middlemen in the citizenship-by-investment industry who probably have little interest in tourist amenities. For their clients—mostly wealthy Chinese, Russians, and Middle Easterners looking for second passports—the less time spent in places like Antigua the better.

Indeed, one of the first things Browne did after being elected last June was to lower Antigua's residency requirement for citizenship buyers to five days over five years from 35 days over the same period. Browne also threw out a plan to publish passport recipients' names. No other program except Malta's does that. "It was an issue of competition," he explains the day before his speech. Antigua settled on five days of residency as a compromise, he says, "so there will be some familiarity with the destination. We don't want it to appear as just a vulgar sale of passports."

That's what the industry is most afraid of, says Nuri Katz, CEO of Apex Capital Partners, an immigration consulting firm based in Montreal. It's the reason leaders like Browne talk about beaches few want to visit and people in the business insist on the term *citizenship by investment* rather than *passports for sale*. "There's a stigma against it, so everyone is trying to keep it under the radar," Katz says.

There are things about Antigua's situation that Browne leaves out of his standard speech. The economy has shrunk by a quarter since the financial crisis. Tourism has taken a hit, and the country's biggest employer, Stanford International Bank, collapsed after the U.S. Securities and Exchange Commission charged its owners with operating a massive Ponzi scheme. "We need the money," Browne says.

Yiorgos Lakkotrypis, the commerce minister of Cyprus, makes a few remarks about beaches and then cuts to the chase, taking about 30 seconds to speed through the procedure of buying citizenship in the third-smallest country in the European Union, with no residency required. "The process?" he says. "Very simple." Applicants fill out a three-page form, invest €2.5 million ($2.8 million) in a villa, and pay €7,000 in fees. Then, as long as they're able to produce a Certificate of Clean Criminal Record, "within 90 days, they can get their European passport."

"Within 90 days," he repeats. "Lately, we

The **golf course** at the Four Seasons resort at Pinney's Beach on Nevis. Buy a villa here—minimum $400,000—and become a citizen.

PHOTOGRAPH BY **JOÃO CANZIANI**

even achieve 70 days. It's very easy process and has very high approval rate."

Kalin says the essential attraction of a second passport has to do with travel: People of means want to be able to move around without endless visa hassles. Taxes are another motivation. Citizenship in places such as St. Kitts or Antigua, where the rate on capital gains is zero, can help a tax lawyer make the case you don't owe money in other jurisdictions.

Thomas Liepman, director of the Christophe Harbour resort in St. Kitts, is at the Singapore conference selling time-share condominiums that come with citizenship for a minimum investment of $400,000. Henley promotes Liepman's resort, along with several others, and collects referral fees. Condo-with-passport packages have become so popular that the island is dotted with villas that are rarely occupied. "This is a fantastic property to have a home, to have an address when the taxman comes asking why I claim that I'm a resident of St. Kitts and Nevis," Liepman tells the audience.

There are a few passport shoppers mingling among the crowd of brokers during intermissions. Auyong Jeen is one of them. A short man from Indonesia in his late 60s, with his shirt untucked and a stack of brochures under one arm, he says he has commercial interests all over the place, including cigarette and cup ramen factories in Cambodia. "Travel difficult," he says, struggling for words in English. Indonesians can visit only 56 countries without a visa, and prized destinations like the U.S. and the EU countries aren't among them.

Another potential buyer is Gul Chotrani. A heavyset Singaporean with his sleeves rolled up, he says his job is managing the family fortune. He's come to the conference as a guest of his representative at Bank of Singapore. "If you haven't noticed," Chotrani says, "there's no such thing as home loyalty anymore. You have to protect your assets. It's the simplest economic logic."

Citizenship shoppers and their representatives at a Henley & Partners conference in Dubai

COURTESY OF HENLEY & PARTNERS

AFTER HENLEY STRUCK THE deal in St. Kitts, business came more easily. So did controversy. Kalin made enemies by driving hard bargains in country after country. In Antigua, the government backed out of its agreement with him just months after the ink dried on a November 2012 contract that would have given Henley the exclusive right to market its citizenship program. Then–Attorney General Justin Simon says Henley took advantage of Antigua's desperation.

"I'm just a very good negotiator," Kalin says. "The former prime minister and Justin Simon can say they were cornered, or they can say what they want. But the process was very fair and very transparent. They reneged."

When Kalin started the St. Kitts deal, the world's oldest citizenship-by-investment program had already been around for decades, but it was slow-moving and bureaucratic. "It was a mess," Kalin says. Earlier that year, the U.S. State Department had warned the program's inadequate regulation was adding to the islands' already high risk of corruption and money laundering.

Kalin's idea was to put the program directly under the oversight of Prime Minister Denzil Douglas, a physician who'd been in power since 1995. It was a move that had unintended consequences.

The deal gave Henley exclusive rights to market St. Kitts as a citizenship destination and a 10 percent commission on every $250,000 investment into a vehicle Kalin set up: the Sugar Industry Diversification Foundation, a fund meant to generate jobs for people who'd lost work in the cane fields. The government, which had owned the sugar plantations and processing plants, shuttered the industry in 2005, saying it was no longer competitive.

Henley's deal was a five-year, renewable monopoly. From the start, the contract made members of Douglas's own cabinet uncomfortable. "I didn't believe that anybody should get exclusivity," says Sam Condor, the former deputy prime minister.

"All these people who are now saying Henley got a sweetheart deal?" Kalin says.

'THE PROCESS? VERY SIMPLE,' SAYS THE COMMERCE MINISTER OF CYPRUS. **'WITHIN 90 DAYS, THEY CAN GET THEIR EUROPEAN PASSPORT.'**

"It's bullshit. We all started from zero. Totally from zero. No one knew how successful this would be."

Shortly after the agreement was concluded, Henley hired a man named Wendell Lawrence, a consultant who was at the same time a paid adviser to the prime minister. Lawrence had been the top bureaucrat at the finance ministry until mid-2005 and was also related to Douglas through marriage, a typical connection on an island where everyone knows everyone. Lawrence says his consulting work for Douglas never involved the citizenship program. "There were firewalls to prevent conflict of interest," he says. Kalin says that although Lawrence was advertised on Henley's website as a partner, he didn't have an ownership stake in the firm.

The tangle of relationships stretched in other directions, too. Douglas appointed the mother of his two children, a former diplomat named Kate Alex Woodley, to head a consulate in Dubai that opened in 2012 to market the citizenship program.

Meanwhile, the business got an unexpected boost. In May 2009, the EU and six Caribbean countries, including St. Kitts, signed an agreement permitting mutual visa-free travel. All of a sudden, a St. Kitts passport was a lot more valuable.

Then another piece fell into place. Canada started to close its investor immigration window. Since the 1990s, the country had been offering residency to wealthy people in exchange for an interest-free loan worth about $650,000. When the program was shuttered outright in early 2014, there were 75,000 unprocessed applications, an enormous opportunity for every other country trying to lure investors.

The St. Kitts citizenship-by-investment unit doesn't say who buys passports or how much money has been generated. The country has no freedom of information legislation, and an integrity-in-public-life act, promised when Douglas took power, hasn't been made law.

"Dr. Douglas handled all of the passports. He signed them all," says Dwyer Astaphan, a former minister of national security who resigned in 2008 and became an outspoken critic of Douglas. "Nobody in St. Kitts has the slightest clue how many passports have been issued, including his cabinet members. I was one."

Douglas didn't respond to multiple interview requests and declined to answer questions in writing. The prime minister was defeated in a Feb. 16 election by Timothy Harris, a former political ally. At the time of this writing, Harris had yet to comment publicly on his plans for the citizenship program.

IN THE SUMMER OF 2013, KALIN TOOK his product to Malta, an island of 420,000 people near Sicily. The stakes were now much higher. Maltese citizenship confers the right to live and work anywhere in the European Union and to travel visa-free to the U.S. "That's pretty much the entire story," says Demetrios Papademetriou, an expert on investor immigration programs and founder of the Migration Policy Institute in Washington.

In January of last year, Malta started selling citizenship for €650,000. (Over the next few months, it added additional investment requirements.) During its first year, the program raised more than €500 million—an amount equal to 16 percent of the government's 2014 budget. Henley earns a 4 percent commission on all the funds paid to Malta. The firm also gets €70,000 from each of its clients, and additional fees if their spouses or children apply.

Kalin says he designed the program with higher barriers to entry than elsewhere. Applicants are run against law-enforcement databases and checked by a due diligence firm. Even then, a candidate who comes up clean might be rejected simply because something doesn't feel right, Kalin says, offering the hypothetical example of a Pakistani national with a pharmaceutical business in the Central African Republic.

Despite these apparent safeguards, then–EU justice commissioner Viviane

Pick One. Or Two

Comparing the world's citizenship-by-investment programs

	Antigua and Barbuda	Bulgaria	Comoros	Cyprus	Dominica
Minimum Cost, Before Fees	**$200,000** contribution *or* **$400,000** real estate investment	**€512,000** investment to establish residency; after one year, an additional **€512,000** investment	**$40,000** contribution	**€2.5 million** real estate investment	**$100,000** contribution
Residency or Visitation Requirement	**Five days** over **five years**	**None**	**None**	**None**	**None**
Number of Countries Visited Visa-Free	122	130	47	157	50

Reding blasted the program in January 2014. “Citizenship must not be up for sale,” she said. The truth is, though, the EU can do little about the program other than make speeches. There’s no legal basis for stopping a member country from exercising its sovereignty. “The reason the EU commission really slammed down on this,” says Papademetriou, “was because it amounted to selling an EU passport and they didn’t trust Malta to do the due diligence.”

Jason Azzopardi, a Maltese lawmaker from the opposition Nationalist Party, calls the program the “prostitution of our citizenship.” He says the prime minister deceived voters by waiting until after being elected in June 2013 to mention the idea of selling passports.

Kalin brushes it all aside. “This is the key point,” he says. “The opposition realizes that this program is going to keep them out of power for a long time. It’s going to bring in a lot of money, and whoever is in office is going to benefit.”

Malta’s Individual Investor Programme was eventually modified to include a residency requirement that is vague even according to the program’s CEO, Jonathan Cardona. “It doesn’t say physical residency,” Cardona says. “We expect an individual to be in Malta for a number of days; we don’t go into the specific number. If you’re asking me, are these people going to move here entirely, I would say, ‘Listen, let’s not fool ourselves.’”

“Forget residency,” says Apex Capital’s Katz. “There’s not even an educational requirement. You don’t have to have graduated high school. The only criteria are you have dough and you’re not a criminal.”

Prime Minister Muscat presents things differently. He describes Malta’s citizenship program as an exclusive membership club open only to the best and brightest of the wealthy. “If you are after the cheapest route to citizenship,” he tells the audience at Henley’s Singapore conference, “Malta is not for you. If you’re after a program that allows in all and sundry, then, sorry again, we’re not for you. But if you want to join the highest-end talent program in the world, we welcome you.”

As the prime minister speaks, a PowerPoint glitch plays an unfortunate trick on him. He’d come onstage after a slide show introducing Henley’s salespeople, the last of whom was blond-haired Christopher Willis, the firm’s rep in St. Kitts.

Willis’s giant head shot, next to a map of the Caribbean, is frozen on-screen. It looms over the prime minister’s shoulder the entire time he’s pitching Malta and its better class of citizenship program. However Muscat tries to sell it, nobody watching will be able to forget where it all started.

Grenada	Malta	St. Kitts and Nevis
$200,000 contribution *or* **$500,000** real estate investment	**€650,000** contribution, **€350,000** real estate investment and **€150,000** investment in approved bonds or shares	**$250,000** contribution *or* **$400,000** real estate investment
None	**Applicants must establish “effective residency” status** (parameters unclear) **for the 12 months preceding the granting of citizenship**	**None**
71	166	132

Sources: Henley & Partners, countries

Jason Clenfield is a reporter-at-large at Bloomberg News in Tokyo. jclenfield@bloomberg.net With assistance from **Peter Langan**, **Terje Langeland**, **Pavel Alpeyev**, and **Jim Powell** in Tokyo and **Yinka Ibukun** in Lagos.


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STRATEGIES

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More Options Than Ever

Trading in listed derivatives in the U.S. is setting records as investors adopt new products to hedge and speculate.

BY CARLOS DA SILVA

IF YOU ONLY READ the headlines about the U.S. Congress rolling back a Dodd-Frank rule on swaps in December, you might think that the derivatives market had become moribund in the years since the global financial crisis. Think again.

Derivatives—both on and off exchanges—continue to trade heavily, according to data from Chicago-based Options Clearing Corp. and the Washington-based Futures Industry Association. Some instruments have recently set records in volume and open interest. In addition, trading is growing even more quickly outside of the traditional equity and interest rate markets—especially in energy, metals, agriculture, and currencies.

For listed equity options, 2014 was a banner year. Average daily trading volume was 16.9 million contracts, according to OCC data. This year, volume climbed further, reaching an average of 17.7 million contracts through Feb. 10. That's close to the record daily average of 18.1 million contracts in 2011, when stock markets tanked as the U.S. credit rating was downgraded and Europe's sovereign debt crisis stoked fears that countries would exit the euro.

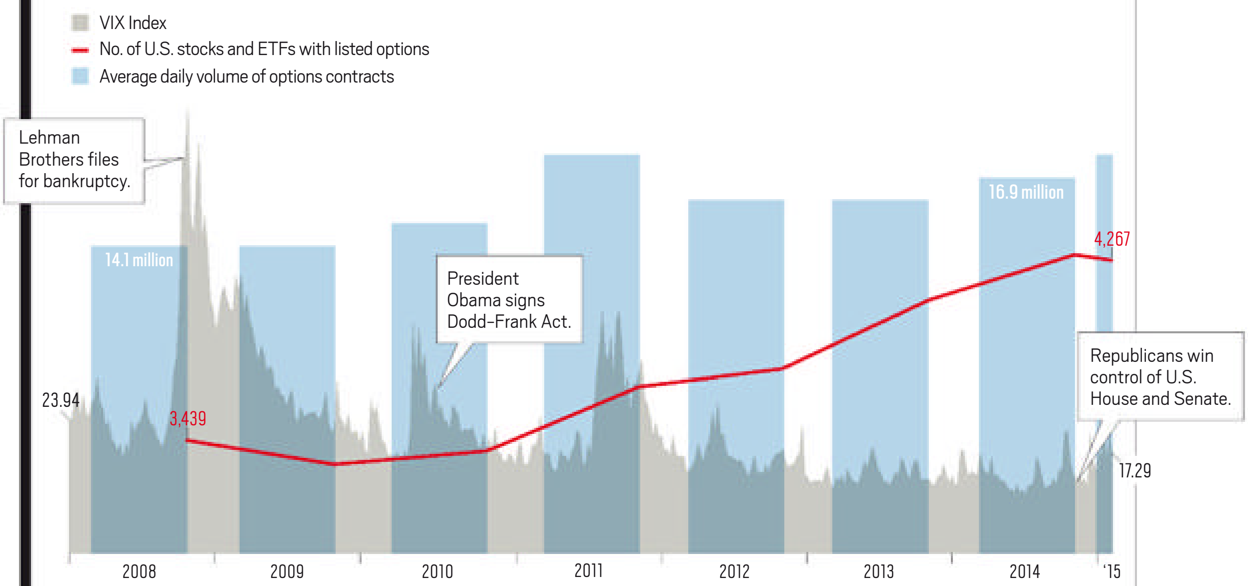
At the end of 2014, open interest was a record 292 million options contracts. The number of U.S. stocks and exchange-traded funds that had options listed on them was also the highest ever: 4,278. Options are contracts that grant the right to buy or sell an asset at a set strike price on or before expiration.

TOTAL OPTIONS VOLUME on nonequity underlying assets had its best year ever in 2014, with more than 420 million contracts traded. That was still well shy of the 3.8 billion equity options that changed hands last year.

Type **BTM <Go>** to track large options trades. You can add the monitor to your Launchpad view.

Expanding Market

Even as volatility subsided in the wake of the financial crisis, trading in U.S.-listed derivatives has risen, as has the number of equities with options listed on them.



Sources: Bloomberg, Options Clearing Corp.

Even the most-conservative fund managers have been adding options to their portfolios thanks to gains in liquidity and price transparency. Options now trade on 12 exchanges in the U.S., with traditional "floor" venues like the Chicago Board Options Exchange adding electronic bourses such as the C2 Options Exchange to try to capture order flow.

Also pushing the market's growth are product innovations. Trading of listed call options started in 1973 with the opening of the CBOE. Put options were first listed in 1977. Options on the CBOE Volatility, or VIX, Index, the most widely quoted measure of stock market volatility, have been trading only since 2006. Each year since then, VIX options volumes have hit records.

Similarly, the introduction of weekly options contracts in 2005 has been followed by an explosion in trading volume. Almost 500 equities in the U.S. now have weekly options available.

Investors looking for trading opportunities have adopted the new products. For example, if you own a stock and are nervous about an upcoming earnings release, you can now buy weekly put options that enable you to potentially lock in your gains. The shorter-term options are cheaper than traditional monthly options: The amount of so-called time premium paid for a weekly option can be much less than that for a monthly.

LET'S SAY THE upcoming calendar is crowded with a lot of data releases that can move the market. VIX options can provide a broad hedge if you want to protect your portfolio or enable you to place a bet on market volatility. To track large trades in VIX options, you can use the Block Trade Monitor (BTM) function. Type **BTM <Go>** on the Bloomberg Professional service, enter *VIX <Index>* in the ENTER SECURITY field, and press <Go>. Click on the box to the left of Options so a check mark appears, if it isn't already selected. For a component that you can add to your Launchpad view, type **LLP <Go>**.

The rise in volume and products also has brought a boom in market and derived data that you can use for idea generation and backtesting. The futures and options markets inundate investors with floods of real-time data. Bloomberg can help you keep on top of the accompanying trading opportunities with highly calibrated calculators and tools.

Carlos da Silva is a business manager for listed derivatives at Bloomberg in New York. cdasilva7@bloomberg.net

TIP BOX

Type **DRVD <Go>** for more information about derivatives on Bloomberg.

Gauging 'Maximum Pain'

BY KANNAN SINGARAVELU

RESERVE BANK OF INDIA Governor Raghuram Rajan surprised markets on Jan. 15 when he cut the country's main policy interest rate to 7.75 percent from 8 percent. The change came between scheduled meetings.

A graph of the Bank Nifty index shows the moves that followed the RBI's easing.

India's equities market soared following the announcement. The CNX Bank Nifty Index, a benchmark that tracks shares of the country's 12 largest banks, rose 12 percent to reach an all-time high of 20,907 on Jan. 28 on the expectation that there would be further rate cuts.

AT THE NEXT scheduled meeting of the central bank, on Feb. 3, Rajan left the repurchase rate unchanged at 7.75 percent. The central bank governor signaled that he wanted to see more data before deciding whether to ease further.

After the pause in rate cutting, the Bank Nifty index dropped back to levels it had been at before the cut, trading at 18,786 on Feb. 6.

Let's say it was Feb. 6, and you wanted to get some insight into where the bank index was likely to trade later in the month. One way is to use the so-called theory of maximum pain to look for hints about the level the benchmark is likely to reach when options on it expire.

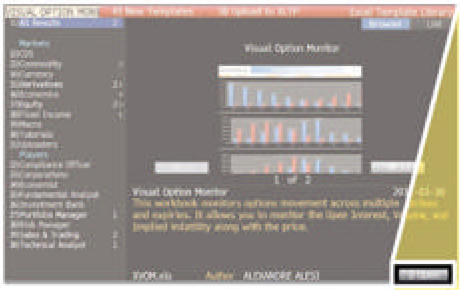
In options trading, maximum-pain theory holds that as the expiration of an options series on a particular stock approaches, the price of the underlying shares tends to gravitate toward its "maximum-pain strike price." That's the level at which the greatest number of options, in rupee—or dollar—terms, will expire worthless. Options are contracts that grant the right but not the obligation to buy or sell shares of an underlying stock at a set strike price at or before expiration.

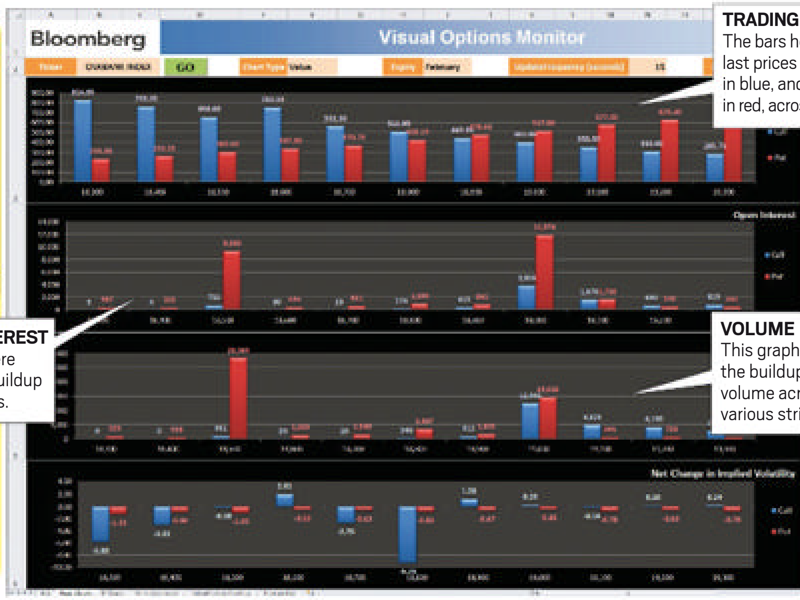
Academic studies, including a 2004 paper by researchers at the University of Illinois at Urbana-Champaign and the Hong Kong University of Science and Technology entitled "Stock Price Clustering on Option Expiration Dates," have found evidence that prices of stocks with options written on them do move in ways that nonoptioned stocks don't. Among the possible reasons for such moves is trading in the underlying stocks by options market makers who are seeking to delta hedge their positions. Delta is the change in the option price given a change in the stock price. Delta hedging involves combining the options exposure with the purchase of a certain quantity of the underlying stock so that a small change in the price of one is essentially canceled out by a move in the other.

TIP BOX

Type **BTM <Go>** to monitor block trades.

To analyze maximum pain, you can use a sample





TRADING
The bars here show last prices for calls, in blue, and for puts, in red, across strikes.

OPEN INTEREST
The bars here show the buildup of contracts.

VOLUME
This graph shows the buildup of volume across the various strikes.

Bloomberg spreadsheet that you can download and customize. First, type **XLTP <Go>** on the Bloomberg Professional service for the Excel Template Library function. Tab in to the SEARCH TEMPLATES field, enter *VISUAL OPTION MONITOR*, and press <Go>. Then click on the Open button.

Click on the Main Charts tab at the bottom of the spreadsheet if it isn't already selected. In the cell to the right of Ticker at the top of the screen, enter *CNXBANK INDEX* and click on the green GO button.

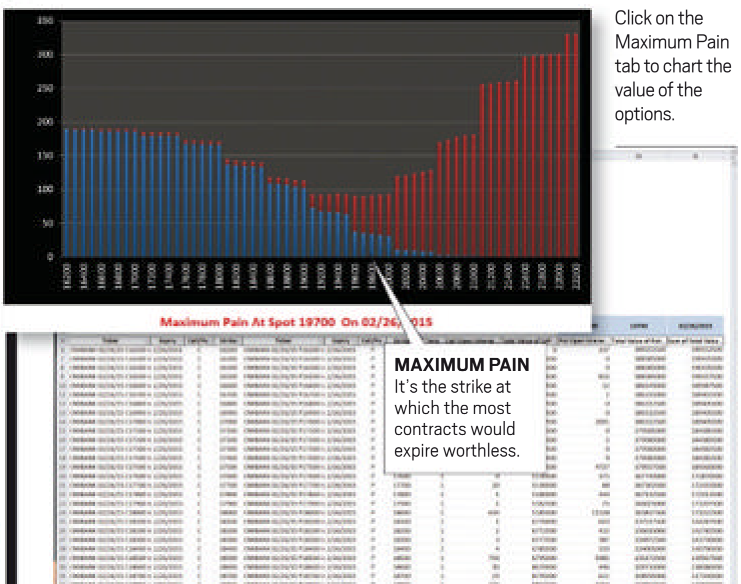
CLICK ON THE cell to the right of Chart Type and then on the arrow that appears and select Value in the menu, if it's not already selected. Let's look at the February expiry. As of Feb. 6, the next expiration of the Bank Nifty options was Feb. 26.

The graph at the top of the Main Charts page displays the last price for calls, in blue, and puts, in red, across various strike prices. Call options grant the right to buy the underlying stock, while puts grant the right to sell. The graphs below show open interest, volume, and the change in implied volatility.

Type **XLTP VISUAL OPTION <Go>** 1 <Go> to download the spreadsheet.

Next, click on the Maximum Pain tab to view the level that options data indicate the index will gravitate toward. As of Feb. 6, the maximum-pain level was 19,700. That was 5 percent higher than the Feb. 6 index level. So while the index had then fallen back to where it was before the Indian central bank announced the surprise cut in mid-January, the maximum-pain number suggested that the probability of a continued drop appeared low.

The financial industry accounts for about a 30 percent weight in the benchmark CNX Nifty Index, making it the largest single sector. So trading in shares of Indian banks is crucial for the trajectory of the broader Indian equities market. The maximum-pain reading can help you potentially gain insight into the market's moves.



Click on the Maximum Pain tab to chart the value of the options.

MAXIMUM PAIN
It's the strike at which the most contracts would expire worthless.

TIP BOX

Type **OHT <Go>** to display option horizon analysis.

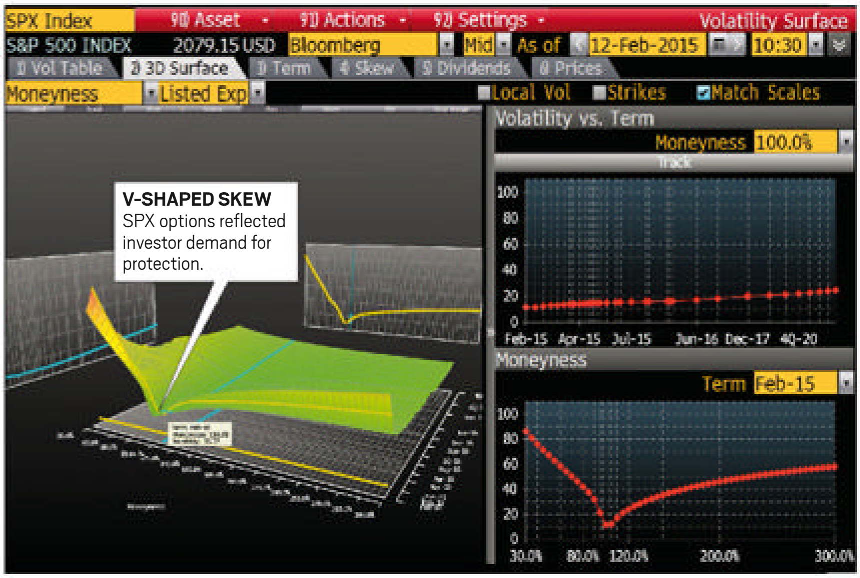
Kannan Singaravelu is an equity derivatives market specialist at Bloomberg in Mumbai. ksingaravelu@bloomberg.net

Hedging With CDS Options

BY ANDREA ARDEMAGNI AND GENE KIM, CFA

THE YEAR KICKED OFF with market fireworks. Crude oil traded at less than $50 a barrel. The yield on 10-year U.S. Treasuries dropped below 2 percent. The Swiss National Bank suddenly scrapped its cap of 1.20 francs per euro. As a result, there have been frequent bouts of volatility in global equity and credit markets.

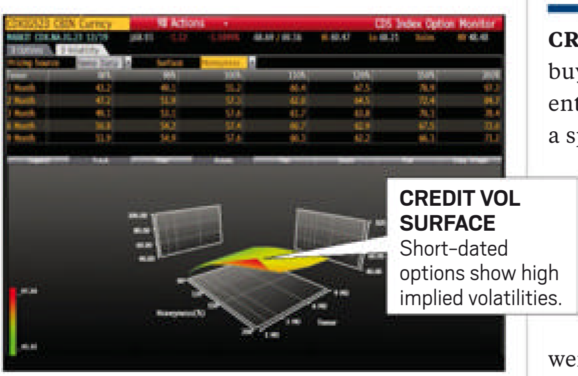
To protect against such swings, many investors use options. To hedge a U.S. equities portfolio, for example, you might buy options on the Standard & Poor's 500 Index. Options are contracts that grant the right but not the obligation to buy or sell an underlying asset at a set strike price on or before expiration.



Type **SPX <Index> OVDV <Go>** and click on the 3D Surface tab to chart S&P 500 volatility.

The market uncertainty and investors' use of short-expiration options to hedge tail risk shows up in the V-shaped skew of the S&P 500. Skew is a plot of implied volatility, or the cost of options, across strike prices or moneyness. Moneyness refers to the ratio of a strike to the underlying asset's trading price. To display the implied volatility surface for the S&P index, type **SPX <Index> OVDV <Go>** for the Volatility Surface function. Click on the 3D Surface tab.

As an alternative to equity options, many investors in the past year have turned to another derivative product: credit index options.



Type **IG/ <Corp> OMON <Go>** for the Option Monitor function and click on the Volatility tab.

CREDIT-DEFAULT-SWAP indexes are used to buy or sell protection on a basket of reference entities. They're a benchmark for credit risk in a specific region or sector or for a certain rating.

Type **CDX <Go>** to track CDS indexes with the CDS Index Monitor function. Click on CDX Investment Grade to display the best and worst performers in the Markit CDX North American Investment Grade Index. The benchmark is composed of 125 equally weighted credit-default swaps on companies that are rated triple-B or higher. Because the index rises when the creditworthiness of its mostly U.S.

TIP BOX

Type **MARS <Go>** to perform scenario analysis on credit options.

companies declines, it tends to have a negative correlation with the S&P 500.

Taking the payer side of a CDS index option—payer refers to the counterparty that makes premium payments over the life of the contract to buy protection—thus offers investors a way to hedge against an adverse move of the corporate bond market. (Historically, credit events have been more common for members of the Markit CDX North American High Yield Index than for those of the investment-grade benchmark. You can use a Bloomberg sample spreadsheet to view all of the credit events in a CDS index family. Type **DOCS #2067888 <Go>** and click on the link to download it.)

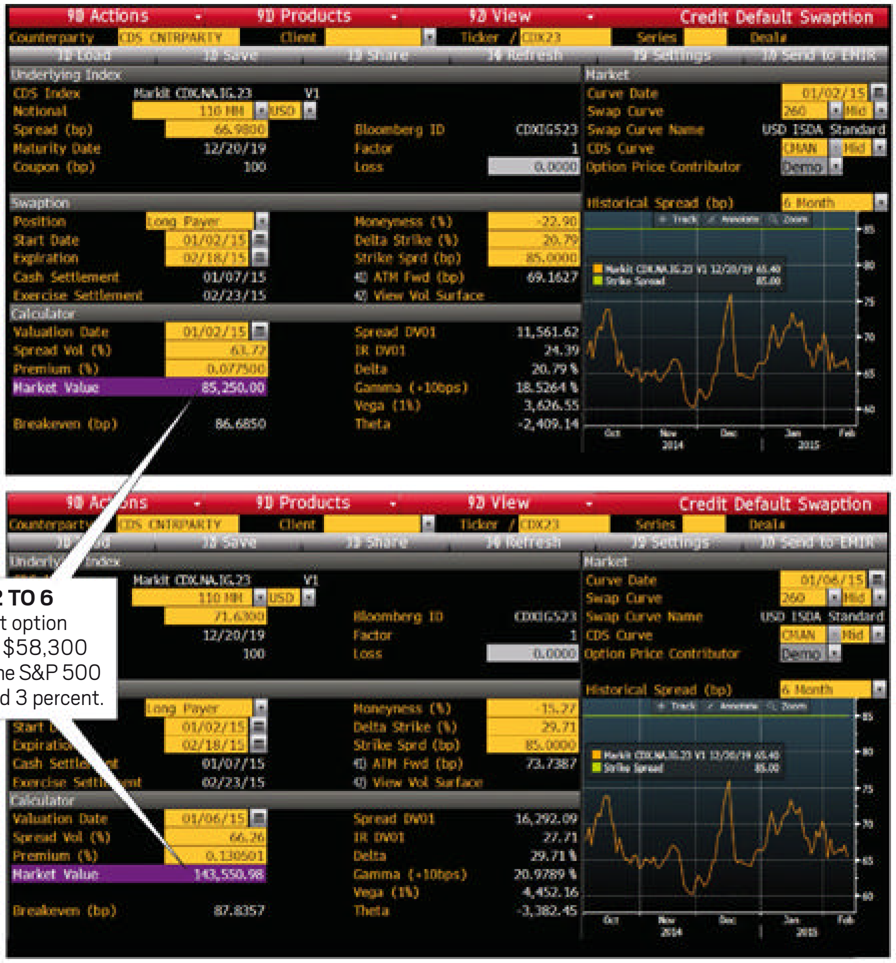
TO ANALYZE OPTIONS on the Markit investment-grade index, type **IG/ <Corp> OMON <Go>** on a Bloomberg screen for the Option Monitor function. Click on the Volatility tab.

The volatility surface for credit options shows something similar to what's been happening with equity derivatives. Short-dated options with high levels of moneyness—200 percent, for example—show high implied volatilities. A 200 percent out-of-the-money CDX IG option is what you might buy if you expected the CDS index spread to spike above its current level. As of early January, the graph in effect showed that investors feared a market drop during the next few weeks—that is, at the one-month tenor—more than one in the longer term.

To price and analyze credit options, type **CDSO <Go>** for the Credit Default Swaption function. On Jan. 2, an option with a $110 million notional value and a strike price that was more than 20 percent out of the money had an at-the-money forward rate, implied from the CDS index curve, of 69.2 basis points. (A basis point is 0.01 percentage point.) The option cost $85,250. The VIX Index, as the Chicago Board Options Exchange Volatility Index is known, traded at 17.79.

A few days later, on Jan. 6, the S&P 500 had dropped 3 percent to 2,003. The VIX jumped to 21.12. The CDX investment-grade index, meanwhile, rose to 71.6 basis points, indicating that spreads in the over-the-counter credit market had widened. The higher implied volatility increased the market value of the option to $143,550, with a net profit of $58,300. For a spreadsheet you can use to analyze CDS options strategies, type **XLTP XCDSO <Go> 1 <Go>**.

The Dodd-Frank Act in the U.S. and the European Market Infrastructure Regulation, or EMIR, in Europe have helped to enhance transparency in over-the-counter derivatives markets. You can now see CDS index options volume and premium data. You can use the SDR Trade Activity (SDR) function to gauge the liquidity of CDS index options. Type **SDR <Go>** and click on the Credit tab and then on the Options subtab. For more information about regulations, type **EMIR <Go>** for the Euro Market Infrastructure Regulation function or **PRAC <Go>** for the Bloomberg Law Practice Areas function.



JAN. 2 TO 6
A credit option gained $58,300 while the S&P 500 dropped 3 percent.

Type **CDSO <Go>** to value a deal with the Credit Default Swaption function.

Andrea Ardemagni is a fixed-income advanced specialist at Bloomberg in New York. aardemagni@bloomberg.net Gene Kim, CFA, is a fixed-income market specialist in New York. ekim108@bloomberg.net

Equity Derivatives

OMON <Go>
lets you view all of the options on a selected stock, index, ETF, or future.

BDVD <Go>
displays dividend forecasts from Bloomberg analysts.

BTM <Go>
lets you monitor block trades of options and futures.

OVSN <Go>
lets you create and price structured products.

OVDV <Go>
displays implied volatility surfaces for selected underlying equity assets.

GV <Go>
lets you graph and compare volatilities on up to four securities.

MOSC <Go>
monitors the most actively traded certificates.

SKEW <Go>
displays volatilities across different strike prices for a selected stock, ETF, or index.

DLIB <Go>
lets you structure custom derivatives deals.

GIV <Go>
graphs real-time implied volatility for a selected equity or index option.

OSCH <Go>
lets you search for options strategies that match criteria you specify.

VCA <Go>
lets you analyze volatilities across different asset classes.

FAIR <Go>
lets you calculate the fair value of a selected equity index or index futures contract.

↑ **OMST <Go>**
lets you analyze the most-active options on a selected stock, index, ETF, or future.

MOSO <Go>
displays the most-active options.

EMSX <Go>
is Bloomberg's multiasset trading platform.

OPDF <Go>
lets you set your defaults for equity derivatives.

OVI <Go>
displays stocks, ETFs, or indexes with the largest increases in options volume.

CERT <Go>
lets you search for certificates and warrants that match criteria you specify.

CWS <Go>
calculates the profitability of covered-call strategies for a selected stock.

OVME <Go>
lets you price options on stocks, indexes, and funds.

WVI <Go>
monitors volatility indexes from around the world.

OSA <Go>
lets you analyze options scenarios.

VSV <Go>
displays variance swap rates.

FMON <Go>
monitors futures trading on a selected exchange.

Compiled by
JON ASMUNDSSON
jasmundsson@bloomberg.net

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IBG-11597 TYPE SPDR <GO>

Comparing European and Asian CoCos

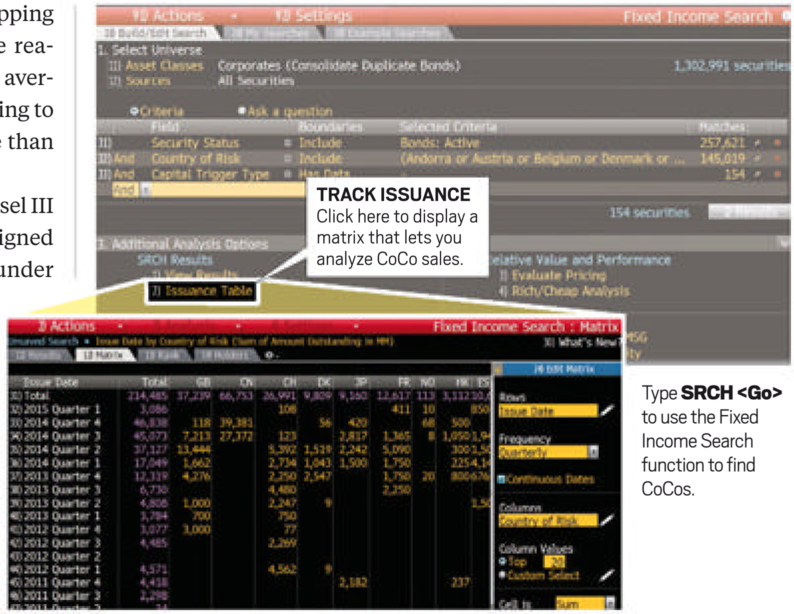
BY SECK MUN CHAN

INVESTORS SEEKING YIELD have been snapping up CoCos, aka contingent convertibles. One reason: The risky bonds issued by banks paid an average coupon of 6.7 percent as of Feb. 10, according to data compiled by Bloomberg. That was more than twice what senior bank debt paid.

CoCos are bonds issued by banks to meet Basel III capital requirements. In essence, they're designed to shift losses to investors if a bank comes under stress. A trigger, such as the bank's capital ratio falling below a specified level, causes the CoCos to convert into equity or be written down.

CoCo issuance hit a record in 2014 as Asian banks joined their European counterparts in selling the newfangled securities. Bank of China sold the country's first additional Tier 1 bond on Oct. 15.

You can use the Fixed Income Search (SRCH) function to track issuance of CoCos and compare those from European and Asian issuers. First, type **SRCH <Go>**. Click on Asset Classes at the top of the screen. In the window that appears, click on the boxes so that Corporates is selected and all other categories are deselected. Under Additional Options, select Consolidate Duplicate Bonds (REGS, 144A and STRIPs). Click on Update.



Type **SRCH <Go>** to use the Fixed Income Search function to find CoCos.

TO SPECIFY THAT you want to look at bonds issued by banks based in Europe and Asia, enter *COUNTRY OF RISK* in the field and click on the first match in the list that appears. Select Include. Click on the pencil icon to the right. In the window that appears, click on the plus sign to the left of Europe and then on Western Europe to select it. Next, scroll down to Asia-Pacific Rim and click on the plus sign. Click on Eastern Asia and then on Update.

TIP BOX

Type **NI COCO <Go>** for headlines of news stories on CoCos.

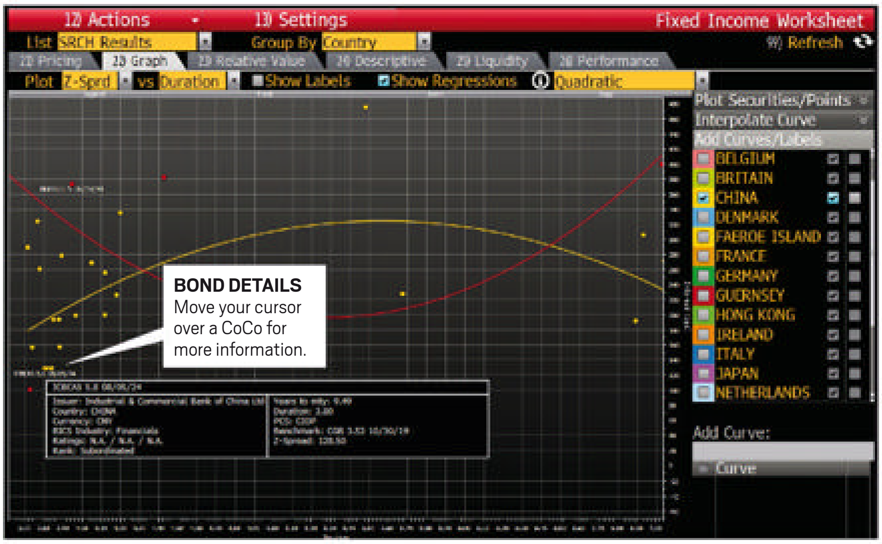
One of the key features of CoCos is the trigger event that causes the bonds to convert. You can use that data to identify the securities. Enter *TRIGGER* in the field and click on the Capital Trigger Type item. Select Has Data.

To track sales of CoCos, click on Issuance Table. In the Edit Matrix panel on the right side of the screen, the Rows data should be set to Issue Date. If it isn't, enter *ISSUE DATE* in the field and click on the match. Next, click on the arrow below Frequency and select Quarterly. In the COLUMNS field, enter *COUNTRY OF RISK* and click on the match. Finally, to see the number of issues, click on the arrow to the right of Cell Is and select Count. Click on Apply.

The table shows that CoCo sales surged in the second, third, and fourth quarters of 2014. Helping drive that gain were Chinese banks, which sold 38

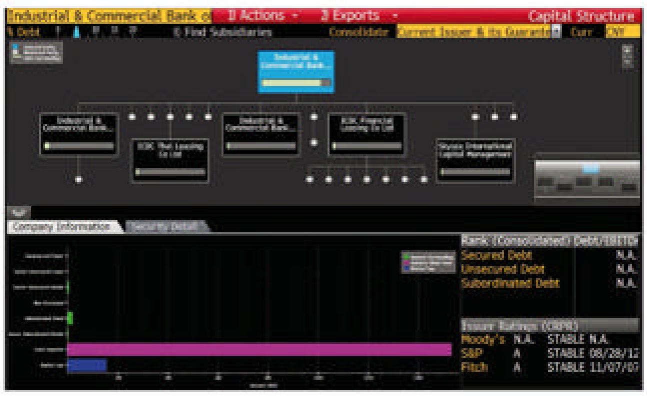
issues in 2014. To display the value of the bond sales, click on the arrow to the right of Cell Is, select Sum, and click on Apply. China was the leading issuer by value. Its banks sold $66.8 billion of CoCos.

TO DISPLAY A list of all of the live CoCos from the search, click on Total in the upper-left corner of the table. You can add columns to the display that show data relevant to CoCos. Click on the Settings button on the red tool bar and select Edit Columns. Tab in to the field under Fields, enter *COCO,* and press <Go>. Click on the box to the left of Cap Type CoCo Action, for example, and then on the Add button to add a column that displays data on the type of loss-absorption mechanism that would be activated. Click on the Update button.



To compare bonds, export the SRCH results to the FIW function and click on the Graph tab.

To graph and compare the list of CoCos, click on the Analysis button and select FI Worksheet (FIW). Click on the Graph tab. Let's plot Z-spread—the implied constant spread over a benchmark zero-coupon swap curve—and duration. Click on the arrow to the right of Plot and select Z-Spread. Click on the arrow to the right of Vs and select Duration.



Type **CAST <Go>** to use the Capital Structure function to dig into an issuer's bonds.

To group the bonds by country, click on the arrow to the right of Group By and select Country Of Risk. You can then chart only the bonds you're interested in. To compare bonds from China and from Sweden, for instance, click on the boxes to the left of the other countries to deselect them.

A U.S. dollar–denominated, 5.5 percent coupon bond issued by Stockholm-based Nordea Bank traded at a spread of 3.71 percent as of Feb. 10. Meanwhile, a yuan-denominated, 5.8 percent coupon bond issued by Beijing-based Industrial & Commercial Bank of China traded at a spread of 1.31 percent. Both have similar durations.

The Nordea Bank bond was issued as additional Tier 1 capital and ranks junior subordinated. The bond can be written down if the bank's common equity Tier 1 capital ratio falls below 8 percent of risk-weighted assets. The ICBC bond is subordinated Tier 2 capital. An important difference, though, is that the trigger is discretionary: The decision of whether to start a writedown lies with China's banking regulators. That adds a degree of uncertainty.

To account for that sort of risk, you could compare the CoCo with other bonds from the same issuer. Type **ICBCAS 5.8 08/05/24 <Corp> CAST <Go>** to use the Capital Structure function to do that. The top half of the screen shows the issuer's corporate tree, while the Company Information tab in the lower half displays debt issuance, tiered by priority of claim, at each level of the tree. Click on the arrow to the right of Consolidate at the top of the screen and select Current Issuer & Its Subsidiaries. Click on the Security Detail tab for information on individual securities.

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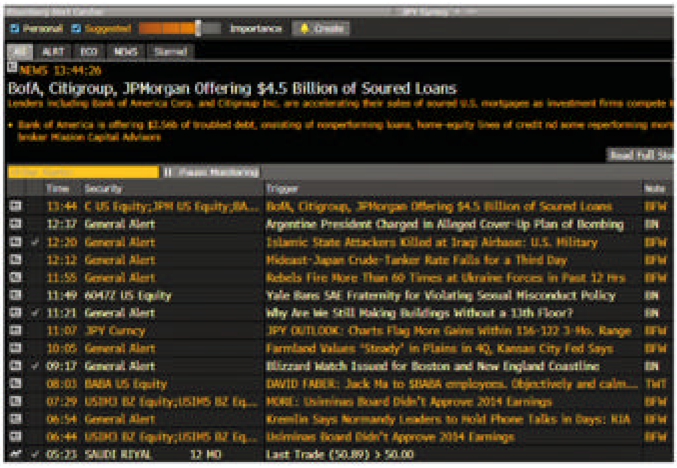
Q: How can I track my alerts?

A: You can use the new Bloomberg Alert Catcher, a tool that consolidates all of your alerts for real-time pricing notifications, economic data releases, and breaking news. Type **BLRT <Go>** on the Bloomberg Professional service for a component that you can incorporate into your Launchpad view. The alert you've received most recently is displayed in the banner section at the top of the component. The buttons in the lower-right corner of the banner let you quickly access relevant functions. A notification based on a market alert, for example, may display a button that lets you analyze that particular security in the Relative Strength Index (RSI) function. Alert Catcher lets you see both personal alerts that you've set up yourself and suggested alerts. You can check or uncheck the boxes in the upper-left corner of the component to turn the streams on or off. The Importance slider lets you control the flow of suggested alerts that you see. Alert Catcher is also available for mobile on iPhone, iPad, and Android devices.



TYPE ALRT <Go> FOR THE NEW ALERTS MANAGER

Market lets you create alerts based on price moves, volume, and more.
News lets you build alerts for news on a company, person, or topic.
Economic creates alerts that notify you of data releases.
Time enables you to create reminders for yourself.

ORGANIZE CHARTS

You can now renumber your G or Launchpad charts so you can better organize them. Type **G <Go>**, right click on a chart you want to renumber and select Rename and Renumber. In the window that appears, you can enter a new title and number for the chart. Click on Update.

MICHIGAN CONSUMER SURVEY DATA

More than 11,000 leading indicators of economic trends and prospects from the University of Michigan Surveys of Consumers are now available on the Bloomberg Professional service. For detailed consumer sentiment data, type **ECST T CONSSENT <Go>**. For a calendar of forthcoming surveys, type **ECO US SUR <Go>**. For more information, type **BPS L#2465375 <Go>**.

CERTIFICATE SEARCHES

The Certificate Portal has been enhanced to let you create and save custom searches for structured products listed on exchanges in Europe, Africa, and Asia. Type **CERT <Go>** and use the filters at the top of the screen to search for the certificates you're interested in. Click on the Search button. Click on Actions and select Edit Column Settings to customize the display. After you've finished, click on Update. Click on Actions again and select Save Template As. In the window that appears, enter a name and a shortcut and click on Update.

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TIP BOX For more recent enhancements, type **NEW <Go>**.

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